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Boeckx, Anastasia

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ECONOMIC CONSEQUENCES OF THE ONE CHILD POLICY IN CHINA

BOECKX ANASTASIA

PROMOTER : Jean-Marie BALAND

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A LETTER OF THANKS

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INTRODUCTION

In my work I will analyze the influence of one-child policy on economy and demography of China. To demonstrate the real impact of this policy, I'll compare the economic and demographic parameters with another country, South Korea.

Why to benchmark these two countries China and South Korea?

According to Hye Tae Kim (2016) they have many similarities. They are known for their rapid development but in different ways. Both are located on the same Eurasian continent; they have a similar culture. The both countries have preferences for sons. This preference is related to Confucian values. That means that the children take care of its old parents and carry family name. The daughters took the name of its husband and went to live in husband's family. This situation is opposite for sons which carry the parents name and lived with them. We can add also that the women had much less autonomy and in case of labor they earned less than the men. The same problem is a rapidly aging population, urbanization.

China's policy has a big impact on sex ratio, especially on a the "missing girls "phenomena. The forced abortions and the obligation of contraception decreased significantly the numbers of born girls. This fertility regulation was responsible for girl's discrimination (das Gupta, 2000). Is this the only one for this sex discrimination? We will provide the evidences that there are different elements. The factors linked to the economic growth such as later marriage age for men and women, more women participation in labor force, higher education level and health standards. All these factors contribute not less to the low fertility rate than the family planning campaigns. In China, the government was persuaded that population growth undermined the economic growth.

The both countries had the family planning program during many years.

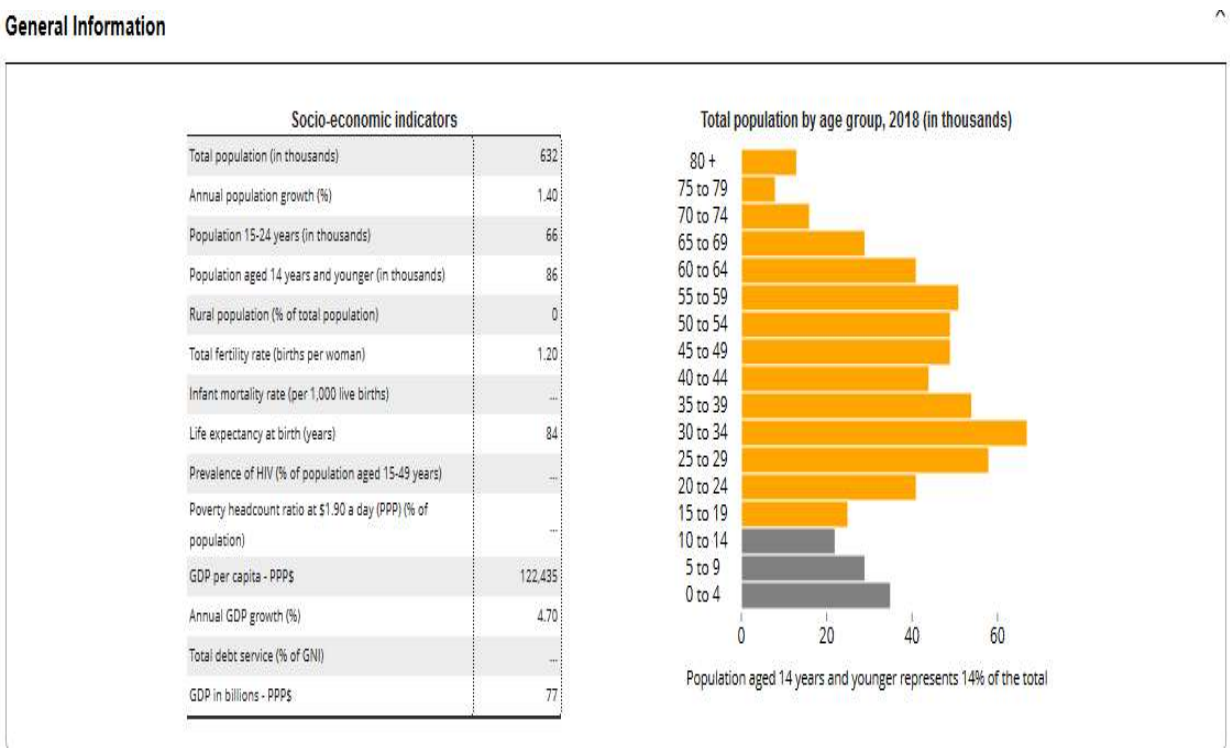
In South Korea the government of President Syngham Rhee (1948-60) started the first birth program. The Christian churches also launched such program in 1957. Special agencies were created (public and private) to control these family programs. In the 1973 Child health organization legalized the abortions. In 1983 the government began to suspend the medical insurance for pregnant women who had already three or more children. In the late 1980s Korea Institute of Planning and other agencies distributed free control devices and information, granted special subsides (such as low-interest housing interest) to parents who agreed to sterilization.

In China population control began in 1956 with the support of Ministry of Public Health. This campaign was interrupted by Great Leap Forward. This was an economic and social campaign launched by Communist party from 1958 to 1961 year. Mao Zedong wanted to transform the agrarian economy to communist society. This agricultural collectivization had to fulfill the quotas based on Mao's exaggerations. The food output declined significantly and caused the starvation and the deaths of 45 millions of Chinese people. The same number of birth were lost during this

Great Chinese Famine. The second campaign took place in 1963-19661 period .During this campaign the birth rate was cut by a half. In 1973 Mai Zedong order to control population more than ever. The one-child policy which began in 1979 gave benefits to one-child families such as cash bonuses, longer maternity and child care. The coercive methods were used such as sterilization and abortions. Contraception were distributed among the population and was controlled by special officials created in order to survey the realization of this strict policy.

For both countries the low fertility rate has negative results. Future elderly population might not be able to rely on their children as it was before. These two societies became an "aged societies".

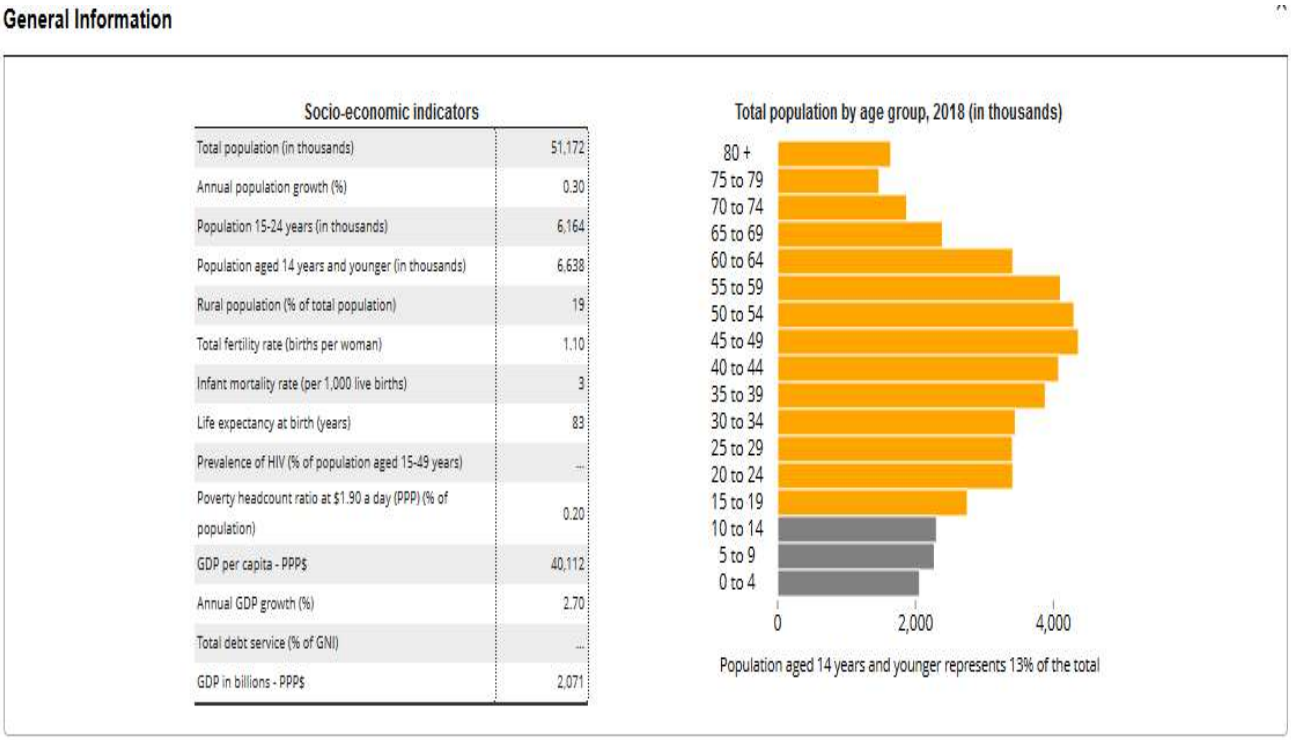
Figure 1. China general info



Source:https://unstats.un.org/unsd/demographic/products/socind/

[1] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), " Ending an Era of Population Control in China: was the one-child policy ever needed ?",American Journal of Economics and Sociology, Vol.75, N.4 (September).

Figure 2. South Korea general info



Source:https://unstats.un.org/unsd/demographic/products/socind/

CHAPTER 1. Literature review

China is the most populous country in the world. It is the country with the fastest economic growth. Very often we associate this country with the one-child policy (OCP). This was the third country control to the rate birth (1979-2015). Each family can have only one child in an urban area and the second in a rural area is authorized if it is a girl or a disabled person. This program applied radical measures such as the prison, the mandatory sterilization, late abortions.

This period destroyed the usual family value where children cared for parents. The families had 4 to 12 children. The children were a resource for the family income because the workforce was cheap. That is why more children resulted in more income.

The monitoring program has completely transformed an age pyramid. In addition, the preference to have boys led to the fact that for about 120 boys there are only 100 girls. Resulting in the rapidly aging population, the monetary resources shortage for the payment of pensions. Women's

population is insufficient, resulting in increasing the rate of crime, the general migration from village to city to find the woman and the income. This program generated a million of unregistered illegitimate children.

This policy lasted 35 years and ceased to exist in 2015. The new policy is called "The universal policy of two children".

In the context of globalization, China has always strived to achieve Western standard of living. According to Ebersatdt (2009): “Next, OCP had a glorious success. It has prevented 400 million births, helped the country quickly improve its incomes, and limited the threat of grain. It also eased the pressure on resource use and the environment, has improved the living conditions of people and has developed their status”.

The Chinese are perfectionists. They forced their children to study, to be able to get out of the deplorable situation and to help their parents later.

In this literature review, I will present the history of OCP and its causes.

1.1.History of OCP and its causes.

The population of China was stable (around 50-60 million) from the 1st to the 16th century. It was raised during the Song Dynasty in 1100. The traditional idea among families was that more children would bring more happiness (Confucianism), which also encouraged national strength. Leaders have promoted fertility. Guan Zhong (720-655 BCE) gave the land to the newlyweds. According to the Guoyu (speech of the old text): “All women remained single at 17 years of age (men to 20 years) have committed the crime with their parents. "

To support families, the government exempted women from work for two years; gave a dog or a pig; provided help with a nurse; gave an exemption of the tax increasing; subsidies for the poorest.

The concepts of "birth planning " and "family planning" were borrowed from the West. It was the population theory of Malthus, who was the follower of one rational management principles. This Chinese economist studied abroad and is at the origin of this idea. Chen Changheng, economist (King 2014), said that the biggest cause of poverty in China is due to too many births. He was convinced that only one-child policy can help the population's survival and help to develop the country.

Margaret Sauger, played an important role. She was the leader and founder of the birth control movement in United States of America. For the first time, she visited China in 1922 where she gave a lecture at the University of Beijing.

Resistance to Western thought was supported by Sun Yat-sen and Liao Zhonghai . They are based on the size of the population. They assumed that it was "racial destruction". Sun (1928:Lecture 1)[2] compared China's growth with that of other countries and said: "If China does not develop in the next 100 years, other countries such as Russia, England, Germany and France could conquer the Chinese people due to the number. "

The same idea was defended by Marxist campaign (Chinese Communist Party) to which Mao Zedong joined later. According to its ideology, "there was not the overcrowding, but poor distribution of wealth and the services that begets the poverty. (Gilmartin 1995:5)[3]. For Marxism, "capitalism reserves the additional unemployed who can be employed at any time". (Li Da, 1984:145)[4].

For Mao Zedong, the solution to poverty was in production and revolution. In the next years, Mao was influenced by the politics of the Soviet Union. The USSR lost around 26.8 million people during the Second World War. The government therefore encouraged women to have many children.

The first birth control started in the early fifties. Deng Yiaoping (Shi 1997) was the "creator of birth control". In 1954, Deng explained that contraception was "necessary and appropriate", Lin Shaogi (1981:II,172)[5] gave a speech on dramatic circumstances: "there is not enough clothes, food, medicine or schools ... increase of the birth rate will be more than 2%". In February 1955, the Ministry of Health submitted a report stating that it had to make the masse birth control. In 1952, Mao supported family planning. But in 1958, its support declined because of the "Great leap forward"[6].

[2] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September),p.937

[3] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September),p.938

[4] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September),p.938

[5] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September),p.942

[6] "The Great Leap Forward (Second Five Year Plan) of the People's Republic of China (PRC) was an economic and social campaign led by the Communist Party of China (CPC) from 1958 to 1962. Chairman Mao Zedong launched the campaign to reconstruct the country from an agrarian economy into a communist society through the formation of people's communes. Mao decreed increased efforts to multiply grain yields and bring industry to the countryside. Local officials were fearful of Anti-Rightist Campaigns and competed to fulfill or over-fulfill quotas based on Mao's exaggerated claims, collecting "surpluses" that in fact did not exist and leaving farmers to starve. Higher officials did not dare to report the economic disaster caused by these policies, and national officials, blaming bad weather for the decline in food output, took little or no action. The Great Leap resulted in tens of millions of deaths, with

At that time, China had " excessive goals, declining product quality and unbalanced economic development", Li Gucheng (1995:91)[7]. Mao planned to complete social and agricultural transformation in ten years.

All these reforms were stopped by the Great Famine from 1958-1961.

During this period, agriculture was transformed into steel production, which led to a decrease in the food supply. Chinese statistics noted: " 15 million excess deaths." According to Frank Dikotter (2010;945)[8]there were: "At least 45 million dead". This fact made birth control unnecessary. The consequences of population growth from 1965 to 1970 led to the adoption of one child policy. It is one of the means of fighting the crisis. Huo (2015:947)[9]: "A single goal: to have the balance between food and people." The Chinese government published the family schedule family and the necessity of using contraception.

In 1966, the Great Proletarian Cultural Revolution interrupted birth control for more than ten years. In 1973, China announced family planning " One is ok, two is perfect and three are too much". Mao Zedong died in 1976. In 1978, Deng Xiaoping created a new constitution in which he

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estimates ranging between 18 million and 45 million deaths.[2] About the same number of births were lost or postponed, making the Great Chinese Famine the largest in human history.

Chief changes in the lives of rural Chinese people included the incremental introduction of mandatory agricultural collectivization. Private farming was prohibited, and those engaged in it were persecuted and labeled counter-revolutionaries. Restrictions on rural people were enforced through public struggle sessions and social pressure, although people also experienced forced labor. Rural industrialization, while officially a priority of the campaign, saw "its development ... aborted by the mistakes of the Great Leap Forward." The Great Leap was one of two periods between 1953 and 1976 in which China's economy shrank. Economist Dwight Perkins argues that "enormous amounts of investment produced only modest increases in production or none at all. ... In short, the Great Leap was a very expensive disaster." In 1959, Mao Zedong ceded day-to-day leadership to pragmatic moderates like Liu Shaoqi and Deng Xiaoping and the CPC studied the damage done at conferences in 1960 and 1962. Mao did not retreat from his policies and instead blamed problems on bad implementation and "rightists" for opposing him. He initiated the Cultural Revolution in 1966 in order to remove opposition and re-consolidate his power. In addition, dozens of dams constructed in Zhumadan, Henan, during the Great Leap Forward collapsed in 1975 under the influence of Typhoon Nina and resulted in one of the greatest man-made catastrophes in history, with an estimated death toll between tens of thousands to 240,000",
https://en.wikipedia.org/wiki/Great_Leap_Forward

[7] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September), p.944

[8] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September), p.945

[9] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), "Ending an Era of Population Control in China: was the one-child policy ever needed?", American Journal of Economics and Sociology, Vol.75, N.4 (September),p.947

encouraged family planning. The Commission of National Health and Family Planning (1979:948) [10]notes: " The one is the best, two at most ."

Birth control was a strategic issue , otherwise “economic growth will be delayed by population growth” (Deng, 2015:949)[11].

1.2.Definition of the one-child policy.

So the OCP was: one child for urban citizens, the second child for rural people if the first is a girl or a disabled person and ethnic minorities were allowed to have two children. But no restrictions on Tibet.

Administrative measures applied for OCP:

- Government and state employees could be dismissed;

- The members of the party were punished by disciplinary measures;

- The other children were not registered and did not have a " hukou " document giving access to education and health care.

The economic measures applied for OCP:

- A couple could pay 15 to 20% of their income if the second child was born;

- Forced abortions, sterilizations

1.3.The influence of Western policy on the one child policy.

The American foundation, the United Nations Fund for Population (UNFPA), played an important role in OCP. This organization was mainly managed by the United States government. At the end of 1999 United - States has provided 177 million of dollars to finance the process census, the birth control and demographic research. The goal was to keep 1.2 billion by the end of the century (Deng 2015).

[10] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), “Ending an Era of Population Control in China: was the one-child policy ever needed?”, American Journal of Economics and Sociology, Vol.75, N.4 (September),p.948

[11] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), “Ending an Era of Population Control in China: was the one-child policy ever needed?”, American Journal of Economics and Sociology, Vol.75, N.4 (September),p.949

Chinese demographers and officials have been trained by UNFPA. In 1983, the foundation awarded the Population Prize to the Minister of Family Planning. The United States expressed " deep gratitude" for the way the authorities used the resources to implement the OCP.

The Rockefeller Foundation and The Japanese financial group also financially supported this policy. Condoms and contraceptive pills production. For John D. Rockefeller III (Critchlow 1996:8)[12]: " Population control was an issue of prime importance and only after the nuclear issue".

Between 1965 and 2004, the United States invested a total of $ 17.3 billion in population control through the UNFPA.

The United States National Security Council (1974) provided a memorandum (NSSM-200). The main elements for population control were:

- Legalization of abortion

- Financial incentive to increase sterilization

- Indoctrination of children

- The required control of the population and the stress from other forms such as the withholding of disaster to the source and food aid at least that a country implements the control of the population problem.

UNFPA awarded China an award for "the most remarkable population control program" (Clowes 2015).

Zbignies Brzezinshi (1997:164)[13], former national security assistant to US President Carter, said: "The threat of food shortage is China's weakness, which could be used as a weapon to prevent China from becoming a truly global power."

Brown in 1994 has noted that the problem is not starvation, but the difference between the market demand and its population. In the 1990s, China produced 329 million tons of grain and consumed 335 million tons. Brown thought that birth control was necessary because this could influence the world.

[12] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), " Ending an Era of Population Control in China: was the one-child policy ever needed ?",American Journal of Economics and Sociology, Vol.75, N.4 (September),p.955

[13] Zhine Wang, Ming Yang, Jialing Zhang and Jiang Chang (2016), " Ending an Era of Population Control in China: was the one-child policy ever needed ?",American Journal of Economics and Sociology, Vol.75, N.4 (September),p.957

CHAPTER 2. Economic consequences of one – child policy.

China has undergone radical changes beginning from Mao's governance. The contemporary period of rapid modernization began in the 1980s with implementation of One-Child Policy. The results of economic transformation impacted the daily lives of Chinese people. Das Gupta (2007) and Lesthaeghe (1983) talked about "the growth of secular individualism" as a result of changing of economic conditions. Jiahong in 2016 explains the rising "individualism" and suggests that China's rapid development was accompanied by highly increasing adhesiveness to individualistic values.

"At no time and in no circumstances should a Communist place his personal interests first; he should subordinate them to the interests of the nation and of the masses. Hence, selfishness, slacking, corruption, seeking the limelight, and so on, are most contemptible, while selflessness, working with all one's energy, whole-hearted devotion to public duty, and quiet hard work will command respect".(Mao, 1938/1966, p. 269)

"In a factory with one thousand or ten thousand people, to have the boss discover you is very hard. You must discover yourself. You must develop yourself. To jump out of the factory, you must study… If you are waiting for your company to lift you up, you will grow old waiting".

(A 17-year-old female factory worker; Chang, 2008, p. 174)

The both quotations are very different. In 20th century, Mao's Communist subordinated self-interest to the interest of the collectivity, considering the personal interest as selfish and corrupting. In 21st century, the self-interest is viewed as a motivation to achieve a better future. These two totally different opinions caused by incredible social, economic, and political change.

Influenced by Western countries, and globalization, China's shift started its industrialization with countrywide poverty and difficult economic situation. China has a different political system with very different views on individual freedoms if comparing with western countries. The primary goal was the material wealth. After appearance of China's open-door policy, Chinese scientists noted changes in people's attitudes or awaked sense of individualism, including self-awareness, independence, and a growing concern for personal well-being (Yu, 1997; Bai, 1998). Sun and Wang (2010). Steele and Lynch (2013) found that individualism has an increasingly strong association with subjective well-being. In their analyses, demographic indicators commonly correlated with individualistic values, such as personal income, employment status, health and demonstrated a strong relation with well-being.

So the reason of rising individualism is an achievement of well -being by every citizen. The well-being of each person leads to the results of modern Chinese economy. We can look at China's economic development through the prism of this individualism.

2.1.Population.

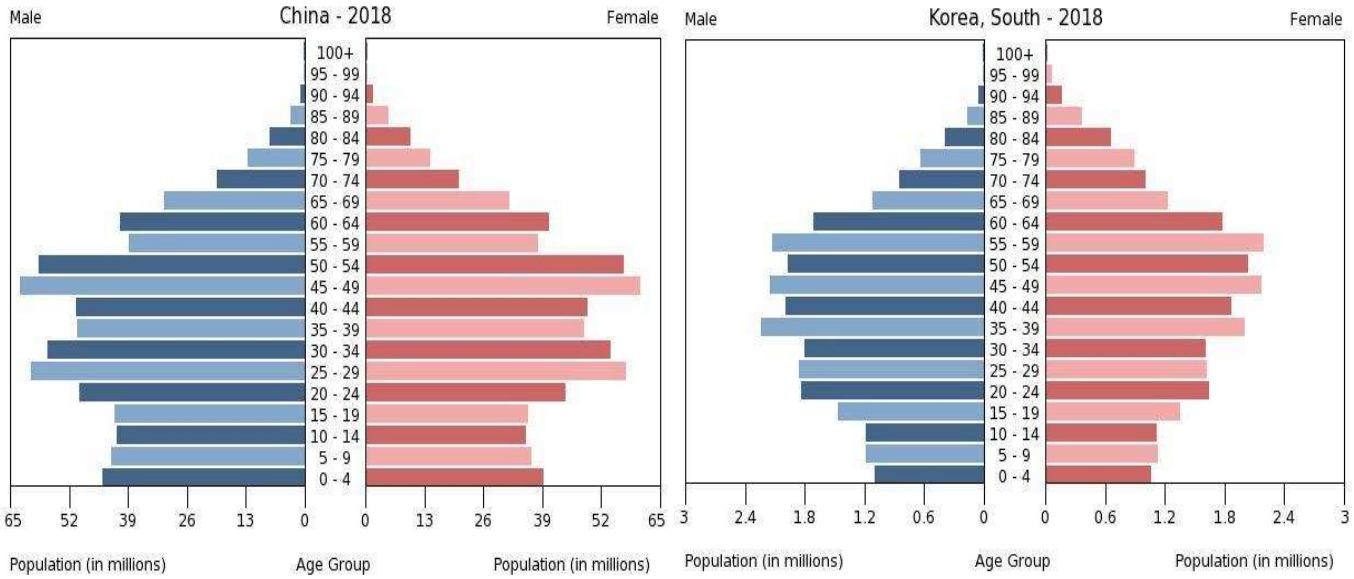
China population is 1,439,323,776 and South Korea Population as for 51,269,185.

A Population pyramid (also called "Age-Sex Pyramid") is a graphical representation of the age and sex of a population.[14]
There are several types of pyramids:

- Expansive - pyramid with a **wide base** (larger percentage of people in younger age groups, indicating high birth rates and high fertility rates) and narrow top (high death rate and lower life expectancies). It suggests a growing population.
- Constrictive - pyramid with a **narrow base** (lower percentage of younger people, indicating declining birth rates with each succeeding age group getting smaller than the previous one).
- Stationary - with a somewhat **equal proportion** of the population in each age group. The population is stable, neither increasing nor decreasing.

A pyramid with a wide base and narrow top suggests high fertility and a growing population, whereas a pyramid with a *narrow base suggests an ageing population with low fertility rates.* We observe this narrow base for both countries.

Figure 2.1. Age pyramid, China and South Korea, 2018



Source: CIA World Factbook - This page was last updated on December 7, 2019

In according to researcher Quick (2019) South Korea is in « population paradox ». The demographers call it "demographic transition". When the country gets richer there is a period

[14] https://www.worldometers.info/demographics/south-korea-demographics/

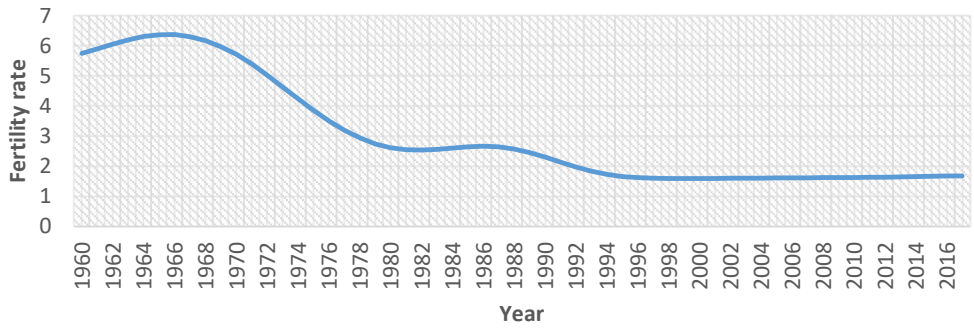
when population swell, decline and then stabilizes. South Korea has a rapidly aging population , low birth rate that doesn't replace the older population. This fact represents a difficult question to solve for the future generation.

We see the same trend for China which will have the same difficulties for future generations. We can add the South Korea has almost the same demography results but without such strict family police as one-child policy in China during 35 years.

2.2. Fertility rate

In according to *United Nations Expert Group Meeting on Policy response to low fertility,* most of the decline took place in the 1970s, before the launching of China's one-child policy in 1979. The total fertility rate dropped by more than one half, from 5.8 births per woman in 1970 to 2.7 births per woman in 1980. During the 1980s, fertility fluctuated mostly above the replacement level [15] (2.1) of 2.6 births per woman. Then in the early 1990s, fertility dropped below replacement level and since then has further declined to around 1.5 births per woman today. Nevertheless, in the early 1990's there was a fast economic development. So this fluctuation can prove that OCP wasn't the main reason for low fertility rate but a development, both economic and personal.

Figure 2.2.Fertility rate, total (births per woman) in China, 1960-2016



Source: https://www.worldbank.org/

NOTE *:* All the figures in this thesis are from https://www.worldbank.org/ except if mentioned another source. Data of China doesn't include China Macao and China Hong-Kong.

Chinese 35-year one-child policy is resulted in a large share of Chinese families with only one child. It is equal to more than 150 million families with only one child. In urban areas, more than 90

[15] Replacement level fertility is the level of fertility at which a population exactly replaces itself from one generation to the next. In developed countries, replacement level fertility can be taken as requiring an average of 2.1 children per woman

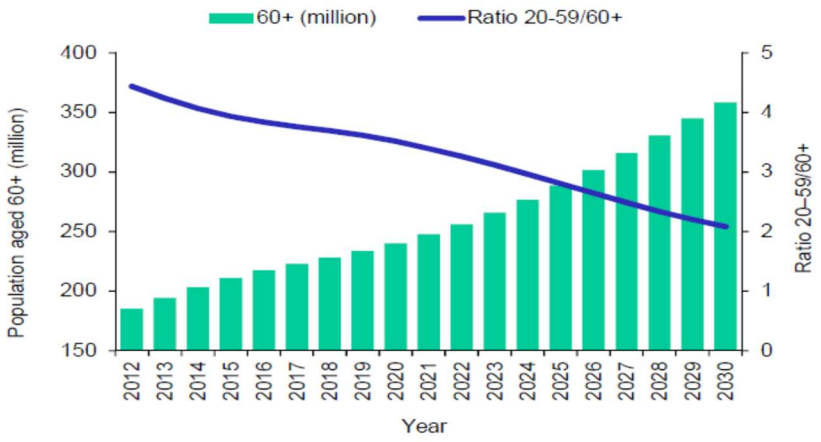
percent of families have only one child. These only children will face a great difficulty to provide economic support to their older parents (through taxes or physical aid to its family).

The fertility decline took place when China began the wide financial reforms which caused an economic boom. From the beginning of 1990s and during the next twenty years' country lived the fastest temp of urbanization, expansion of higher education and improvement in living standards doubled. The highest increase for secondary school enrolment, college and university enrolment (about eight times more). The two important forces linked to this rapid economic played in fertility decline: the high cost of child for family. We talked about in the beginning that everything becomes more and more expensive in the material world. But also an enormous pressure to "get ahead", "to live better than our ancestors/parents". This is generated by the opportunities during the hyper economic growth. Consequently, for Chinese families it became too expensive to have children. That's why that the number of children is below the replacement level. We can suggest that even if there wasn't this Government's birth-control policy, fertility would follow the same trend.

This period of low fertility during the period of the mentioned economic growth accelerated drastically the population ageing. The last Chinese census in 2010 reported that about 14 per cent of the population was aged 60 and above. In according to calculation of researchers, if China will continue to have a fertility level of 1.47 births per woman, thus the proportion of Chinese aged 60 and above will rise to 25 per cent by 2030. Following the same tendency during next 20-years, the number of Chinese in this age group will rise from about 180 million to more than 350 million. This fact places China among the fastest-ageing societies in the world, at the same place as South Korea.

This situation of ageing population poses major challenges. The economic consequences of this demographic shift are problems of labor-force supply, savings, investment and tax burden on working population. To go back to the idea of rising individualism. One-child policy created this individualism, the only and one child in the family became normal. The generation born in 1980's doesn't want to have more than one child or even non. The personal well-being drives to selfishness.

Figure 2.3. Size of population aged 60 and above and ratio of population aged 20–59 to population aged 60 and above, China, 2012–2030 (based on an assumed total fertility rate of 1.47 births per woman)

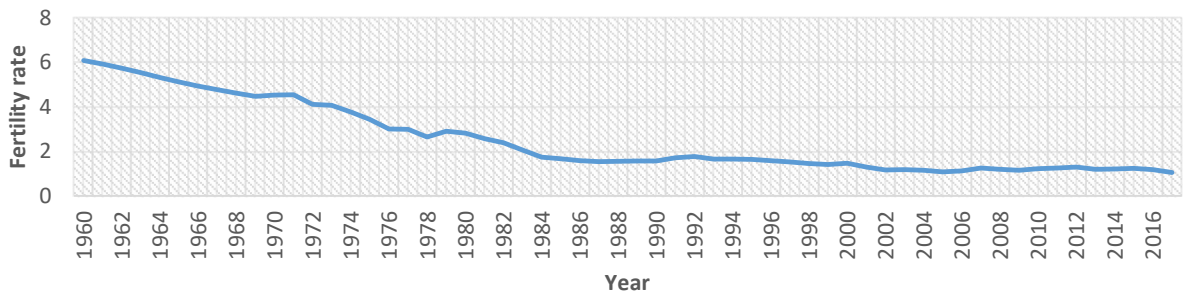


Source: "Below-replacement fertility in China: Policy response is long overdue", Policy Brief, N 5

The fertility rate in South Korea in 2017 is about 1.1 children. To show the contrast, the global average in World bank data is 2.5 children per woman. During the period 1960-2017 fertility rate dropped from 6 to 1 children per woman. The key factor of population stabilization is a "replacement rate ". This rate is a point at which the number of children born per woman is balanced out the number of elder generation death. The worldwide replacement level is 2.1 children per woman. This means that South-Korean fertility rate doesn't reach the replacement level needed. The impact of this indicator for future generation is the same as for China. The working population will have the strong difficulties to support the elder generation (through tax burden or physical family support).

This fertility decline reflects the rapid economic development and shows that every person would like have a better life and as the good life conditions become more expensive (cost of child also), there is a trend to have les children and to have an opportunity to give the best for one child rather than medium life quality to few kids.

Figure 2.4.Fertility rate in South Korea, 1960-2017



2.3. The problem of elder care.

The Chinese population is a rapidly aging population. According to the China National Committee on Aging, the elderly population will reach 300 million in 2026 and to 400 million in 2037.

Urban Express 2012: "This situation affects the ratio of workers to retirees and requires greater care of the elderly for hundreds of millions of Chinese families."

Traditionally in China, parents lived with these children who looked after them. But OCP and urbanization changed this structure to "4 -2-1". This means that they have 4 grandparents, 2 parents and 1 child (Zhang, 2013). The question is how to take care of all these aging parents.

The generation born after 1980 was the happiest because they were the only child in the family. Now these "spoiled" children should take care of their parents financially, physically and mentally.

The aging of the population is increasing rapidly, especially in rural areas. The social programs are developing rapidly but not so in rural areas. (World Bank 2009). The government has put in place several programs to provide the necessary social protection.

2.3.1.Dependency Ratio

To demonstrate the dependence of aging population from working population we add the Dependency Ratio table.

The age dependency ratio expresses the relationship between the "dependent population" (ages 0-15 and 65-plus, referred as "youth" and "elderly") and the "working age population" (ages 16-64). Higher values indicate a greater level of dependency. The dependency ratio is used to measure the pressure on the productive population.

The estimation of dependency ratio is essential for economists, bankers, business, industry and all other substantial economic segments which can benefit from understanding the impacts of changes in population structure. A low dependency ratio means that there are sufficient people working who can support the dependent population. This lower ratio allows better pensions and better health care for citizens. A higher ratio indicates more financial pressure on working people.

NOTE: Dependency Ratio does not take into account labor force participation rates by age group. Some portion of the population counted as "working age" may actually be unemployed or not in the labor force whereas some portion of the "dependent" population may be employed and not necessarily economically dependent[16].

[16] https://www.worldometers.info/demographics/south-korea-demographics/

Formula

In published international statistics, the dependent part usually includes those under the age of 15 and over the age of 64. The productive part makes up the population in between, ages 15 – 64. It is normally expressed as a percentage:

$$\text{(Total) Dependency ratio} = \frac{\text{(number of people aged 0 to 14)} + \text{(number of people aged 65 and over)}}{\text{number of people aged 15 to 64}} \times 100$$

As the ratio increases there may be an increased charge on the active part of the population to maintain the pensions of the economically dependent. This results impacts directly the financial expenditures like social security.

The (total) dependency ratio can be decomposed into the child (youth) dependency ratio and the aged (elderly) dependency ratio:

$$\text{Child dependency ratio} = \frac{\text{number of people aged 0 to 14}}{\text{number of people aged 15 to 64}} \times 100$$

$$\text{Aged dependency ratio} = \frac{\text{number of people aged 65 and over}}{\text{number of people aged 15 to 64}} \times 100$$

Table 2.1. China Dependency Ratio (2018)

Age Group	Total Age Group Population	Share of Total Population	Dependency Ratio
Youth (0-14 years old)	254,930,371	17.71%	25.2
Working Age Population (15-64 years)	1,012,131,229	70.32%	N.A.
Elderly (65+ years old)	172,262,174	11.97%	17
Total Dependency Ratio (Youth + Elderly)	**427,192,545**	**29.68%**	**42.2**

Table 2.2.South Korea Dependency ratio (2018)

Age Group	Total Age Group Population	Share of Total Population	Dependency Ratio
Youth (0-14 years old)	6,430,595	12.54%	17.5
Working Age Population (15-64 years)	36,742,718	71.67%	N.A.
Elderly (65+ years old)	8,095,870	15.79%	22
Total Dependency Ratio (Youth + Elderly)	**14,526,465**	**28.33%**	**39.5**

As we can see in South Korea there is more elderly population than in China (15.79% vs 11.97%) Therefore, the aging population problem is more represented in South Korea

The trend in population change shows that South Korea had in declining it birth rate during the period of 35 years from 1979 to 2015. If we compare the values, for example in 1987 China had a birth rate as for 23.33 and South Korea has only 15. This clearly shows that there is no really necessary to implement the strict family planning policy but to boost the economic development.

The propaganda of increasing fertility and allowing immigration especially of younger working age can help to lower dependency ratios, but future job decreasing due to automation may impact these efforts.

2.3.2.Demographic Change

Two countries face the two problems of population change: aging population and low fertility rate. This reflects in increasing of elderly population and decreasing of working-age population.

The current statistics demonstrates an essential issue for demographers, the labor shortage and the heavy tax burden on working people. And as a result - slow economic growth. A labor shortage that will pull on both the economy and the pension system for its aging residents.

In according to the life cycle hypothesis (Almas Heshmati,2019), older people present negative savings, an increase in the elderly population leads to a decrease in saving rates, investments, and capital accumulation. These factors, being a production and innovation factors, decrease economic growth. In South Korea there is the highest poverty rate for elderly of any developed countries. In long-term there is an important problem: who will take care of elder people? Because of the culture based on Confucian tradition when parents are taking care of children, national social security system is implemented slowly.

The imbalanced sex ratio at birth is due to prenatal sex identification techniques. Even if the sex ratio is normalizing now, there are much more males than female for 25-29 cohorts of marriageable age. This creates a short-term marriage problem as the cohorts with the imbalanced sex ratio age. However, the never married elderly men will have no children to rely upon. Finally, career discontinuity for mothers after giving birth leads to the underutilization of human capital.

One of the main reason for low fertility is a rising in women's participation in the labor market and higher female education levels. Investment in education increases women's independence and their returns to experience in the labor market, leading women to work more in order to have an advantage of returns to experience (so that women with longer careers experience have higher wage growth). The increase in women's level of education and participation in economic activities raises the cost of giving birth. This is directly linked to decreasing in fertility rates.

The rising middle class creates increasing in demand (Alexander Whitebrook,2016). The rise of the middle class has negative implications for food and water security. This demand will be limited by supply of fresh water and decline in the availability of land due to increased urbanization as a resulting from wealth growing. The population becomes rich. The wealthiest portion of population constitutes a large part of global demand for high-end goods. With the income increasing, population spends much more on recreation and health security.

Demographic change modifies the migration patterns. This presents an opportunity to use better rural-urban migrants for China. But at the same time the urbanization means less land for food production. For South Korea it's not possible as almost all population is urban citizen. Foreign

immigrants could be a significant supplement of decreasing workforce for both countries. For harmonized nation as South Korea it leads to diversification of nationalities (cultures) and its acceptance.

Figure 2.5. Korea's demographic trends,1976-2016

Table 2.3 Korea's demographic trends, 5-year averages, 1971-2015

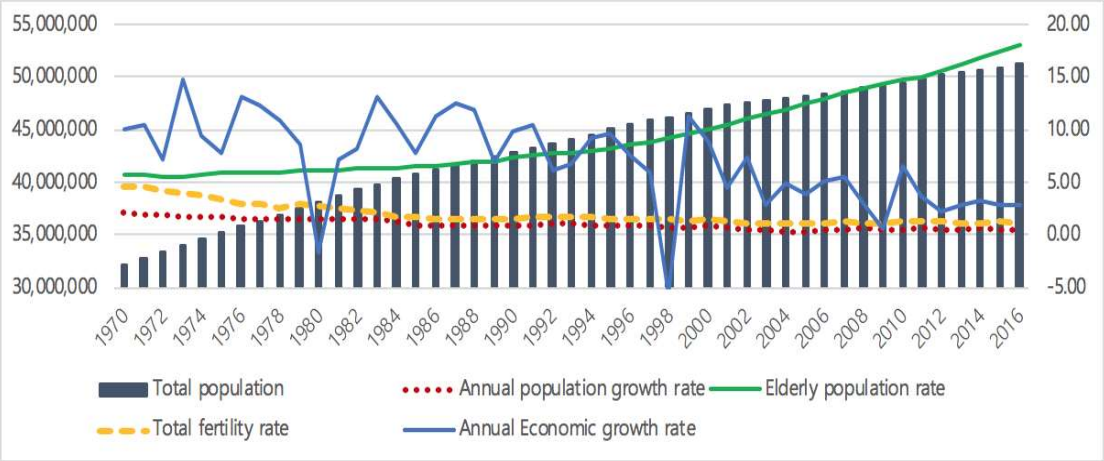


Figure 1. Korea's demographic trends (1970-2016)
Source: Statistics Korea.

Table 1. Korea's demographic trends, 5-year averages (1971-2015)

	1971-75	1976-80	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10	2011-15
Total population in million	34.9	36.98	39.83	42.03	44.19	46.28	47.83	49.01	50.47
Annual population growth, %	1.80	1.55	1.36	0.99	1.01	0.83	0.50	0.56	0.58
Elderly population rate, %	5.74	6.04	6.34	6.92	7.90	9.30	11.50	13.94	16.24
Total fertility rate	3.99	2.87	2.08	1.56	1.68	1.48	1.17	1.19	1.23
Annual economic growth rate, %	9.98	8.62	9.36	10.48	8.44	5.64	4.72	4.14	3.00

Source:https://www.georgetownjournalofinternationalaffairs.org/online-edition/2019/1/1/the-economics-of-south-korean-demographics

Figure 2.6.Population change in China,1960-2017

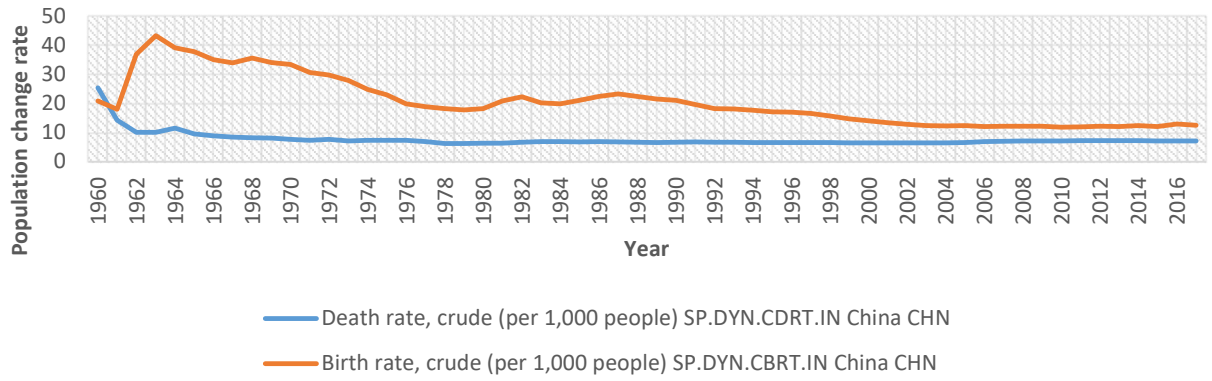
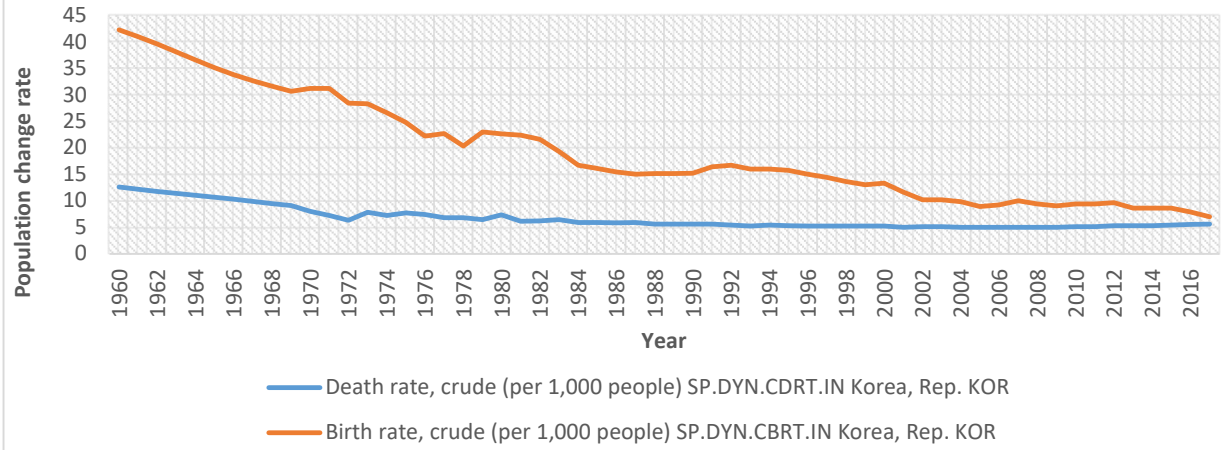


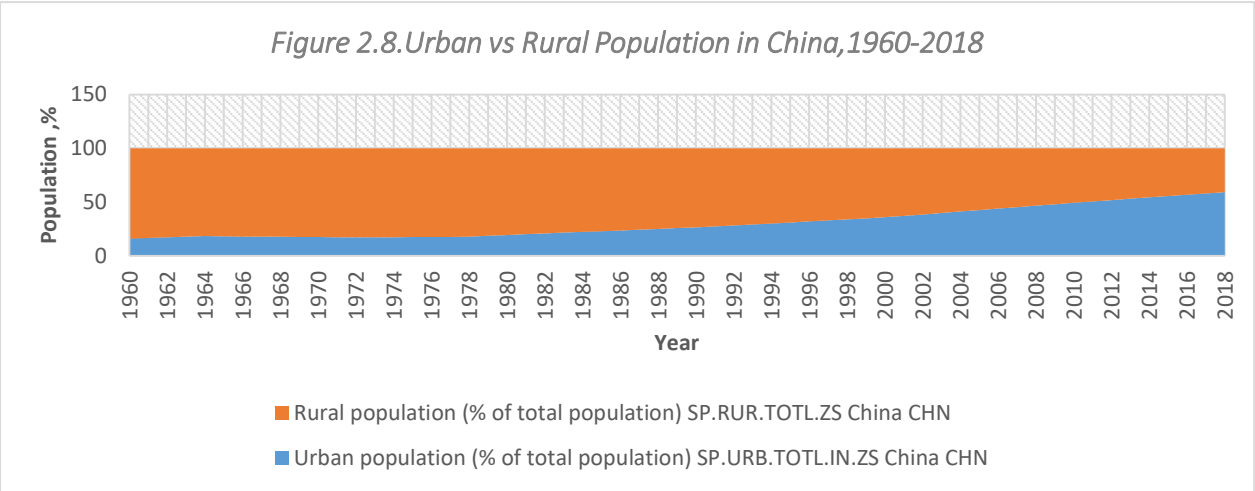
Figure 2.7.Population change in South. Korea, 1960-2017



2.4.Urban and rural areas.

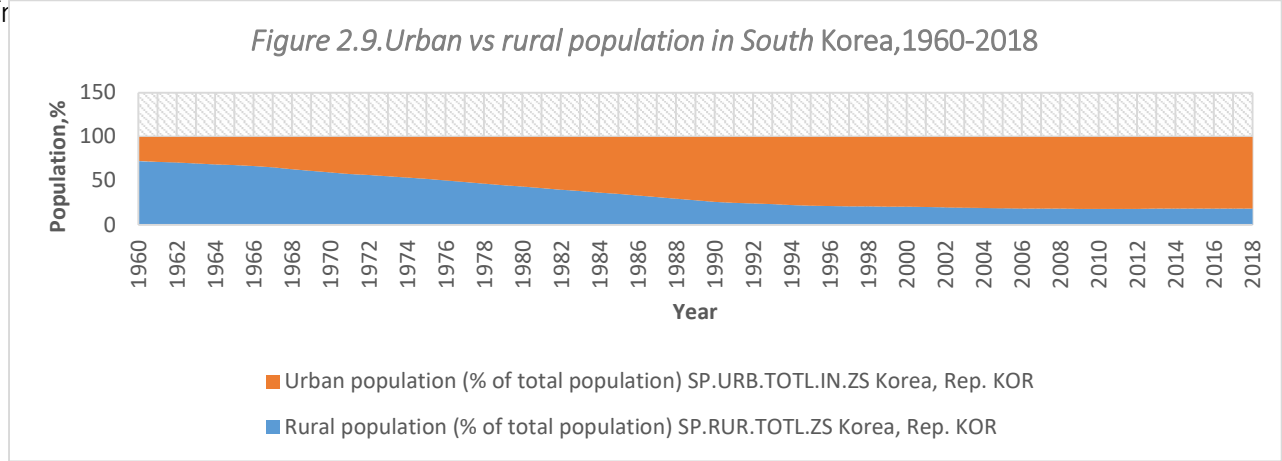
China urban population

In 2018, 59.7 % of the population of China is urban. Historically China was an agrarian country. There is still 40% of rural areas which have a great disparity in comparing with urban areas. There is much less developed infrastructure, poverty. These are the areas which didn't benefit a lot from economic reforms after 1980's. During the OCP period China progressively increased its urban percentage from 20% in 1980 to 55% in 2015.



South Korea Urban Population

In 2018, 81.6 % of the population of South Korea is urban. There is only 18 % of rural population. Geographically, South Korea has more mountain areas than prairies for agriculture. South Korea is poor in land and natural resources. This situation differs country from China. During economic growth the majority of Korean population moved to cities or constructed the cities instead of villages. During the same OCP period South Korea progressively increased its urban percentage fr

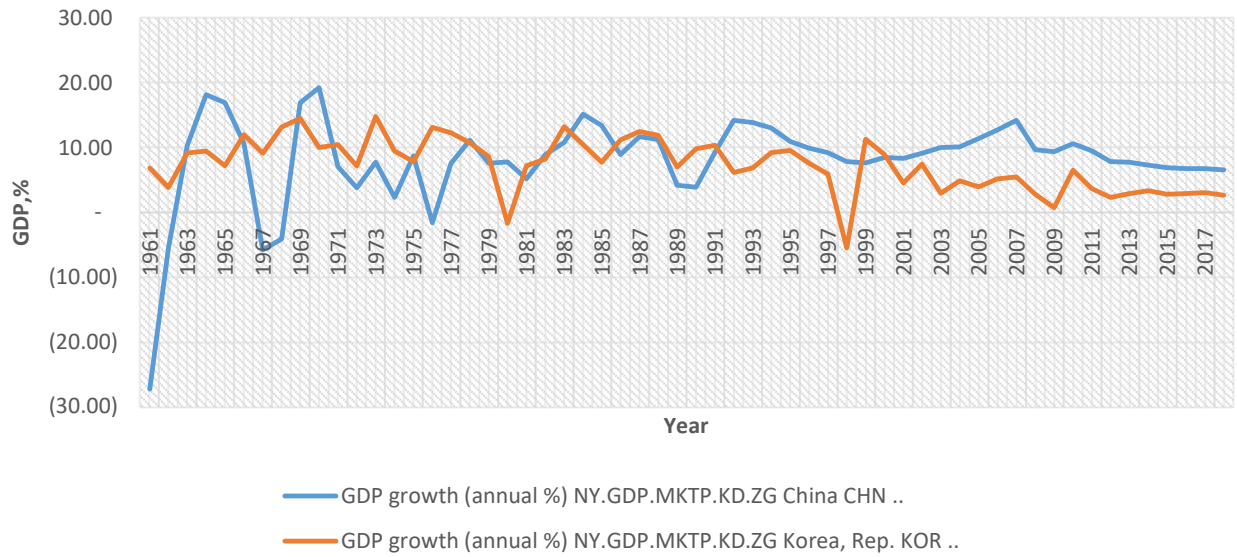


The huge difference between these two countries may be the reason of better developed South Korea than China. But also the difficulty of construction new life mode for huge Chinese population.

2.5.Gross Domestic Product (GDP) growth.

Both countries have an economic growth. The latest data from World Bank shows that South Korea has 31 362 USD in 2018 and China has 9 770 USD in 2018.What do we observe looking at this graph? First of all, during 2000-2018 both countries had massive growth GDP. But China's growth has double growth than Korea's. The average growth of China during these years is 9.14% and for South Korea is 4.05%. This indicates that the GDP growth was much bigger than that of South Korea.

Figure 2.10.GDP growth annual (%) inChina & South Korea,1960-2017



Source: World bank national accounts data and OECD national accounts data

The South Korea had very fast growth from 1962 to 1976. It increased from 3.84% to 13.12% and it was more impressive than considering the oil crisis in 1974 -1975 (9.46 % and 7.86% growth for these two years). While many developed and developing countries strongly dropped in its GDP indicator. Plus, South Korea as one of the few developed countries which could avoid a recession during the global financial crisis in 2008. It's economic growth reached 6.2% in 2010 (the fastest growth after 7.2% in 2002) and a sharp recovery from economic rate 2.3% in 2008 and 0.2% in 2009.

If we compare with China, it's economic growth began in 1979 after country opened the economy to Western countries when it started the economic reform for six years. In according with "China's economic rise report "(2019): "China experienced the fastest sustained expansion by a major economy in history—and has lifted more than 800 million people out of poverty." China's reforms included boosting export, importing high technology into the country, created economic zones to attract the foreign investments and trade liberalization (removing partially price control). All these factors influence GDP which average annual growth was 9.5% from 1978-2018. This mean that China doubles its growth rate every eight years.

At the same time One-child policy was launched in 1979.

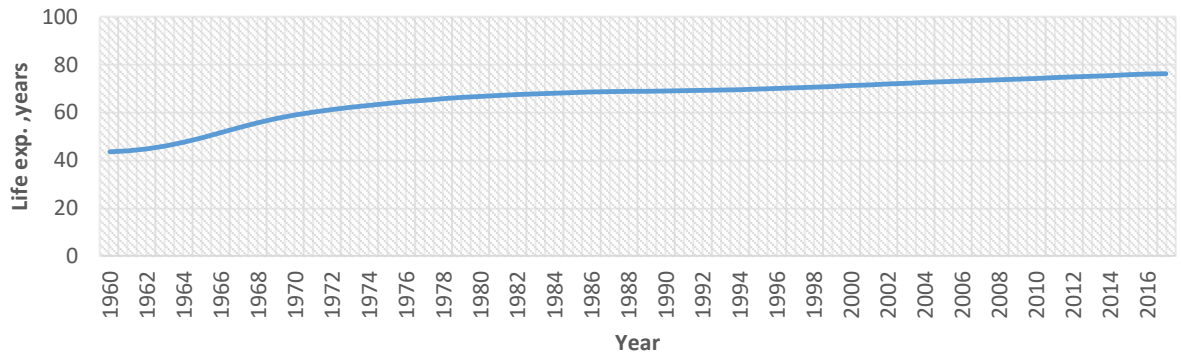
This rapid growth surely is linked with individualism. The goal of well-being, an objective of life satisfaction brought the country to such results. The country's economic development depends on participation and beliefs of each citizen.

2.6.Life expectancy and Health.

Analyzing China's life expectancy and mortality rates for different age groups provides the insights on China's health care system. This factor in according to *China Power Team. "Developing or developed? Assessing Chinese life expectancy" China Power*. *December 28, 2015 sheds* light on one of China's most important resources for cultivating power – its own people.

Life expectancy is one of the key social development indicator that provides an important summary of mortality conditions within country. China has made considerable progress in raising the average life expectancy across the country from 69.3 years in 1990 to 76.3 years in 2016. And if we are talking about OCP period, there is 66.37 years in 1979 and 75.93 years in 2015.

Figure 2.11.Life expectancy at birth, total (years) in China,1960-2017



China has made impressive growth in life expectancy with given scope of its territory and population. From the 1950's, China increased its average life expectancy at birth from around 40 years to over 70 years. This result was achieved in about 100 years by many advanced economies. The health improvements reduced the child and adult mortality.

Figure 2.12.Under-five mortality rate,female China,1970-2018

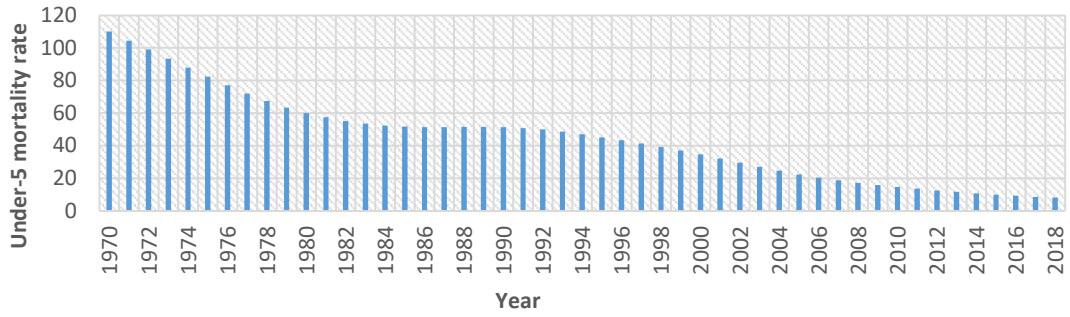
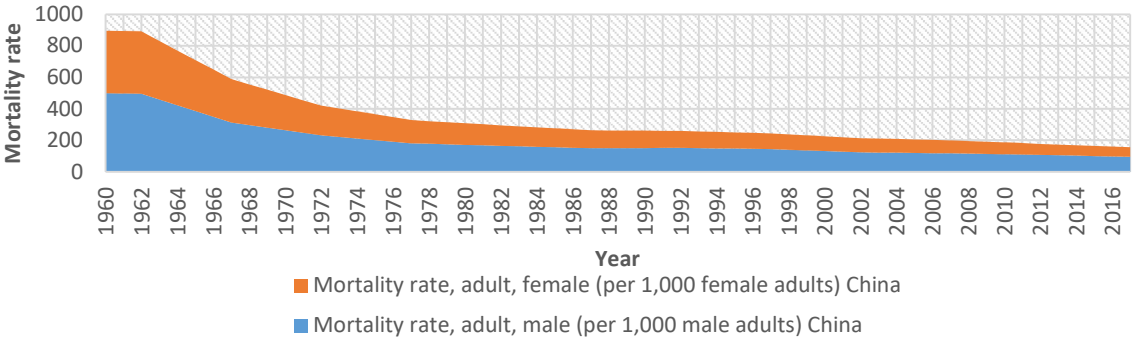


Figure 2.13.Mortality rate, adult in China, 1960-2017



The biggest factor in rising life expectancy rate was the improvement in public health services, and particularly in infant and maternal health. World Bank data indicates that between 1980 and 2015 (OCP period), China's mortality rate for children under 5 fell from 60.0 to 10.7 per 1,000, and this reduction is equal to approximately 80 percent.

In the same way, improvements in adult mortality rates also raised China's life expectancy levels. In 1980, the mortality rate for adults between age 15 and 60 was at 140,59 for women and at 174.32 for men per 1,000, and by 2015, it had been reduced to 64.15 and 100.07 accordingly. These improvements in infant and adult mortality led to significant increase in life expectancy, which was at 66.37 years in 1980 and reached 75.93 years in 2015. Although mortality rates have fallen. But the prioritization of economic growth led to deterioration environmental conditions, including air, soil, and water pollution that affects public health.

Richard Jackson: "*Development is wonderful. Rising incomes and affluence allow people to escape poverty and fulfill hopes and dreams that they otherwise couldn't hope to achieve, but it also brings along with it the plague of chronic diseases".* This citation proves once more time that the economic development improves our life conditions (public health here) and the same time our profit –oriented goals pollute the environment that degrades our health and therefore we consume more health services and thus boosts medical sector.

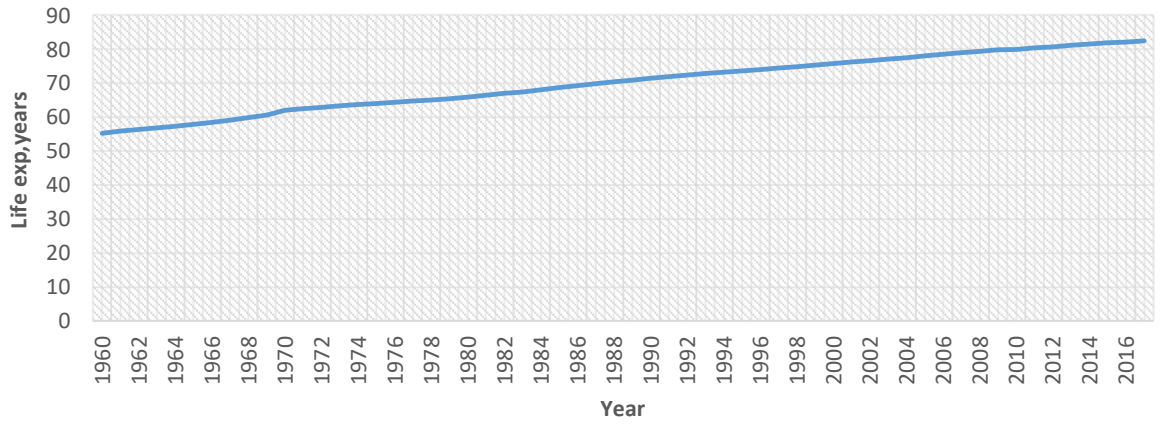
Life expectancy within China varies greatly by region. There are large disparities between the urban and rural residents, as well as between the different provinces. Thera are gaps in development levels between interior areas pf country which had much more less profit from economic reforms than the coastal areas.

China differentiation urban-rural has a noticeable impact on health income. Researchers Chen, Liu, and Yang of the China Health and Nutrition Survey, discovered that rural residents with higher levels of education still demonstrated worse health outcomes than similarly educated urban counterparts. A 2003 survey indicated that only 20 percent of the rural population had access to health care coverage, in comparison to 60 percent of urban inhabitant. In another comparison, the gap in average life expectancy between Shanghai and the poorest provinces in 2013 was 13 years. The rural relative isolation, poverty, lower levels of public infrastructure and expenditures created the health disparities.

In China, Public health was especially turned to the women's health as they are responsible for household health; (Das Gupta, 2000). Women's health benefited from population control. These efforts had to ensure good conditions for pregnancy, child health. The maternal and child health improvements reduced infant mortality (Sidel, 1982).

Nowadays, South Korea has one of the highest life expectancies in the world: 82 years.
And to compare UN Population Division confirms the global average as for 72 years. The improvements of the health care led the population to extended longevity. The life expectancy in 1960 was only 55 years. Today this number looks extremely different. It's increased significantly from 2000. Now the newborn baby can expect to live to the age of 82 years. This rise was in parallel with industrialization. To compare the OCP period values, we note that in 1980 there was 66.05 years and in 2015 there is 81.72 years. In China there was for the same period 66.37 and 75.93. We note that during the same period South Korea improved it life expectancy for almost 6 years more. This gap can be due to less developed rural health services in China than in South Korea. And also because of much more rural population in China than in South Korea.

Figure 2.14.Life expectancy at birth in South Korea, 1960-2017



The Worth Health Organization's World Bank's "Global Health Observatory," in 1990 published the fact that " Korea nation quickly caught up and currently also have averages higher than age 80. The China's trends are standing at an average of 76 years". These general trends show general improvements in life expectancy across Asian countries.

Figure 2.15.Under-five mortality rate,female in South Korea,1970-2018

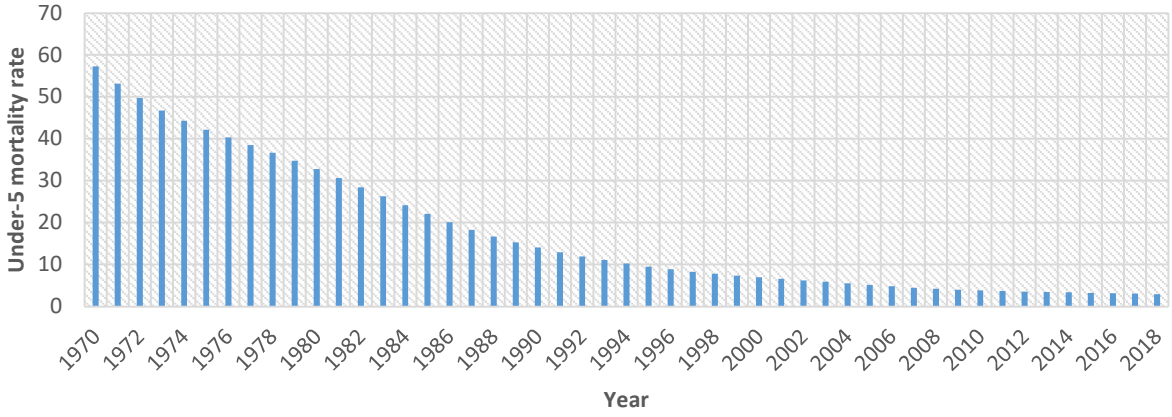
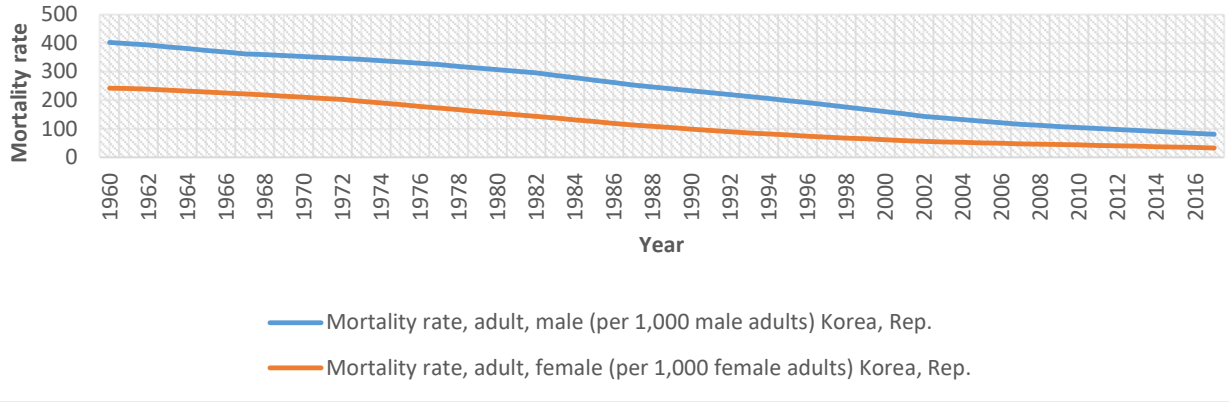


Figure 2.16.Mortality rate, adult South Korea,1960-2017



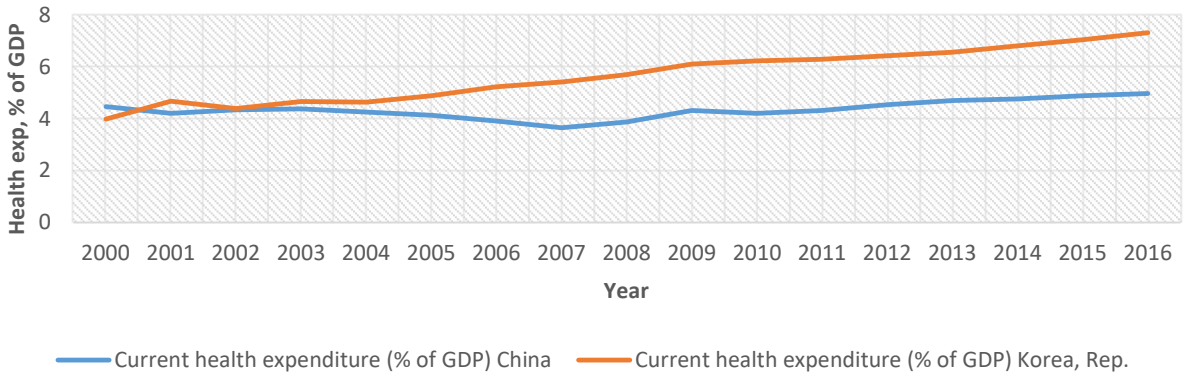
South Korea's mortality rate for children under 5 fell from 32.77 (1979) to 3.22 (2015) per 1,000, and this reduction is equal to approximately 90 percent. We note that this reduction is at 10 percent more than in China. This can show the better health income across the South Korea.

The mortality rate for adults between age 15 and 60 was at 307,02 for men and at 154.66 in 1 for men per 1,000 in 1980, and by 2015, it had been reduced to 87.25 and 35.77 accordingly.

We can see for both rates the dramatic gains from improved health services as a result of development and human's desire to live longer and better life and have and profit its material goods.

The government's strategy in South Korea was focused on improving health and reducing fertility (Kim, 1990). The improvements in living conditions and nutrition resulted in decline in mortality. The "New Community Movement "was organized by government for rural development. The results were shown in increasing average of life expectancy (1960-1995). The population control program launched in 1962 (Kim, 1972) contributed to rapid reduction in child mortality. In the mid-1970's the government perceived that to maintain the fertility decline, it was needed to reduce the son's preferences. Since 1980s, the government become more receptive to Women's organization as the high sex ratios at birth lead to shortage of future wives (KIHASA and UNDP 1998).

Figure 2.17.Health expenditure China vs South Korea,2000-2016



2.7.An imbalance in sex ratio

An average sex ratio at birth is 100 baby girls versus 130 baby boys. In 2005, the sex- ratio is 119 boys for every 1 00 girls. This has led to the fact that a large number of men will never be married. According to China's National Bureau of Statistics, by 2020, there will be 30 million to more of men than women (China Business News 2015). The factors behind this relationship are: preference for yarns; the rate of low of the fertility; the availability of gender detection techniques such as ultrasound, used for selective abortion.

The fertility in rural areas is higher because they have been allowed to have a second child if the first was a girl. Having a son was more useful for parents, and the second son did not provide the allowance after the first daughter. So they only wanted the first son. The son was more productive than a daughter. The selection of sex was expensive for rural areas as ultrasonic devices were mainly located in urban areas.

After Mao's death, the new agricultural reform was created. It was a transition from collective use to individuals. This land reform made it possible to allocate an equal share of land to each farmer. The latter could make the decisions and dispose of all income once the obligations of the State were discharged. This reform has led to increased production and reduced poverty. Douglas (2017) estimated that half of the sex ratio increased between 1978 and 1986, during the landing reform period. The result is approximately 1 million missing girls. The OCP started at the same time as an agrarian reform.

The decline in fertility and her preference for boys increased the rate of celibacy. Historically, China had a universal marriage for women and a competitive market for men. Universal marriage means marriage in all educational groups and in all birth cohorts. The OCP has changed this trend. Many men will remain alone without the support of their wives and children. At the same time, many women have emigrated to the wealthiest areas to find the husband with better status. As a result, men between 30 and 39 will never be married. Monica Das Gupta et al (2010) reported that unmarried men were concentrated in the poorest areas where the level of social protection was low.

Due to the phenomena of “missing women”, the marriage market shows the bargaining power of women. To attract women for their sons, the boy's parents have a higher savings rate and invest more in education.

This problem can be partially resolved by international migration. The foreign wives from poor Asian neighbors can contribute to it. But these countries have a high level of development and peasant men can provide the necessary social level for their women. China should raise the standard of living in the poorest regions in order to attract wives.

China and South Korea have both the son preference which is attributed to Confucian values. In the case of China’s this strict fertility regulation preference is responsible for discrimination against daughters. In South Korea the son preference is attributed to patriarchal family system and low female autonomy (Das Gupta and al,2000). The strong son preference results in high levels of excess of female child mortality.

This son preference can be changed if population shifts living from agrarian society to the industrialized and urbanize modern society with the very different requirements.

These similar family systems marginalize women effectively and shows the social and economic pressure on sons. The kinship systems give parents very little benefit from daughters and strong

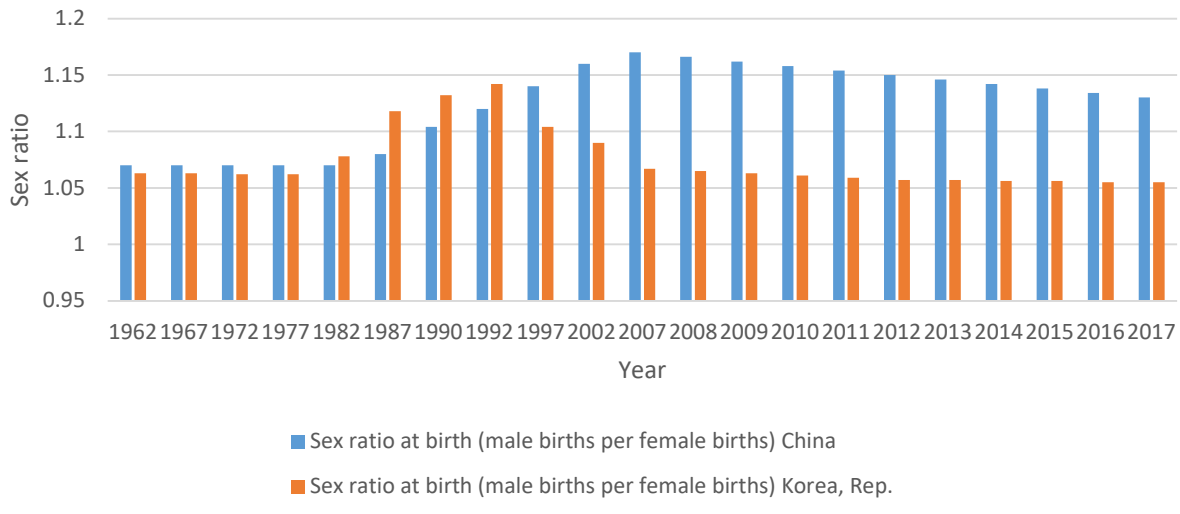
economic incentives to prefer sons. The preference for the son is keeping even if the bride prices paid and the adult women are economically very active.

The “discrimination “for the girls was realized in different ways: by using contraception if the family have enough boys; through sex-selective abortion which is reflected in sex rations more masculine than normal biological rate; through daughter abandon during early childhood which is reflected in higher mortality of girls than boys.

The prenatal discrimination has shift due to the accessibility of sex-selective technology (Goodkind 1996). South Korea shows the highest level of sex-selective abortion as it’s access to such technology is highest. So South Korea was developed in this sense before China. In China there are still people without physical and financial access to sex-selective technology but still shows the excess of female mortality among child’s births. The availability of sex-selective technology increases the proportion of “missing” girls. The sex-rations raised harshly about 1990 when the technology became widespread. This date is not far from the beginning of one-child policy in 1979. There was an opinion that the family planning sharped the son preference. But the voluntary fertility decline in South Korea had the high sex ratios as in China without specific family planning (and even more than in China; in 1987 there is 1.08 ration for China and 1.12 for South Korea). The both fertility decline and sex-selective technology raised the discrimination against girls. Also the government policy (through economic reforms) changed and so no more need to have more children to have more income.

When fertility falls with strong son preference, there is much higher pressure to avoid the daughters.

Figure 2.18.Sex ratio at birth (male births per female births) in China & South Korea,1962-2017



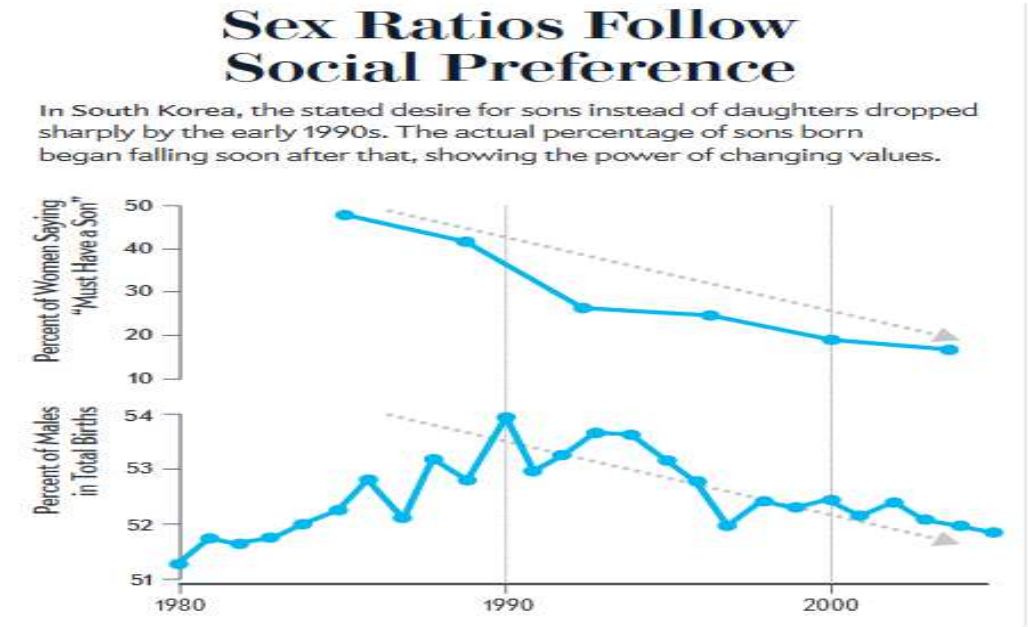
The demographer das Gupta in 2007 affirms that the son preference is declining.

In South Korea and in China industrialization and urbanization changes the Confucian traditions. In industrialized society the population becomes independent from their family. The earning money allows to save for old age and that reduces the dependence of the financial support from their children (sons). The urban life is very different from the rural life. In village communities the members are surrounded by their families and in cities the daily life is separated by apartments and offices. This fact reduces the pressure on sons. The urban mobility also means impossibility to care of parents. The same situation is for married women which don't live always with their parents. Also an access to the higher education shows the decline for son preference. The growth in female education and employment increase the economic value and their contribution for family. Even the most conservative groups in rural areas shows a fall in son preference. Surely, government policy influences directly the gender inequalities (military regime vs democracy).

The level of wealth, comfort and material goods (standards of living) which is measured by standards as income per capita and poverty rate. The standard of living includes factors as employment, poverty rate, gross domestic product, year, access to quality healthcare, education, literacy rates, life expectancy, and other economic and social factors of the country. The standard of living is closely related to quality of life. Looking on our sex ratio graph, we can see that since 2007 South Korea's rate has a significant difference with China's rate (an average of 0.1 of difference for period 2007-2017). In according to researchers Jinyoung Kim and others (2016), the gender inequality has an impact on long terms growth of South Korea. The strategy of creating well-educated workers brought the country to higher levels of labor productivity and developed capabilities for facilitating technological adoption and innovation. South Korea's strategy of export-oriented country led to low-cost and good quality labor. All these factors influenced the sex ratio which has dropped down to the normal level. This is an indicator that Korean parents no longer perceive any disadvantage in having daughters instead of sons. In a modern society women participate more and more in a labor marker that influences the productivity and growth in general.

On the graph below, Das Gupta (2017) shows that when the attitudes change, child sex follows. She counted that social norms transformation influenced the son preference decline in 73 percent and the increasing of education or urbanization level influenced only in 23 percent. In according to demographer, the parents' education plays a major role.

Figure 2.19. Sex ratios follow social preference



Das Gupta Monica,2017," Return of missing daughters", The New science of sex and gender, September, Scientific American.om https://socy.umd.edu/sites/socy.umd.edu/files/pubs/das_gupta_scientific_american.pdf

In China public policies are targeted on decreasing the gender inequality through media campaigns; legislation in family code; sponsoring women's organizations; financial incentives to raise the daughters. Also, the rapid changes in rural areas as developing of non-farming employment. Another life sources make citizens more independent of family traditions and circulate the urban way of thinking. The South Korea is placed better than China. It's far ahead in terms of industrialization and urbanization. It also has an advantage to be smaller and homogenous where the new ideas can be spread easier than in large and different China. As a contrast in South Korea, the military policy doesn't want to change the social norms. This tendency slows down the diffusion of new values. South Korea could decline son preference before it became high developed country without the compensation military policy.

The son preference is needed to be changed. The government policies and support can help to change the social norms and relying only on increasing women's education. The expansion of media with women portrays helping their aged parents could change the stereotype of son preference (Das Gupta,2017). To change the old habits, to adapt the ancient culture to modern society. This cultural change can lead to more girls but countries will need one generation to change the current situation.

2.8.Labor force

The female labor participation in agrarian countries is working women in the farm. But this work is largely depressed. The is because the women's position in the kinship is marginal. Even if the women do almost all manual labor in agriculture, the production is perceived to be the men's as the take the decisions and are the owners of the land. In China there were efforts to recognize women's contribution by families and communities in agricultural work (Xie,1997). Paid work is valued much more than the work in farm. Investments in daughters will be perceived as investing in another family until women adults contribute little to their parent family in according the tradition as they are considered as a part of husband's family.

The growth of women's paid employment will reduce son preference if the public policy will contribute to parents well-being. In China, women's employment grew in the new industrialized market economy. This was part of effort of Communist China (Xie, 1997). By contrast, women of South Korea participated actively in paid work since 1960 but the conservative public policy doesn't give enough benefit to parents from daughters as from sons.

If we look at Figures 2.20 and 2.21 below "Output structure ", we see that China has still in its structure an agriculture percent which more than those of South Korea. At contrast South Korea had already before 1980 the manufacturing in its output and the China implemented manufacturing only from the 2004. So from the fist view, South Korea began its economic much earlier than China. This can give the idea that in 20 years China will have the same indicator's level as South Korea.

Figure 2.20.China output structure,1960-2018

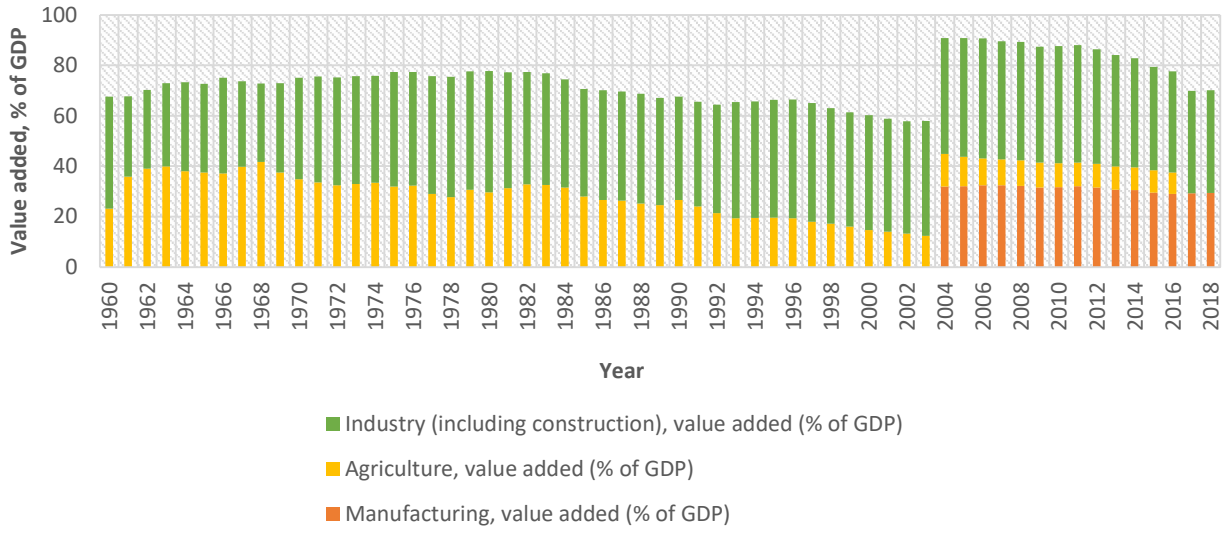
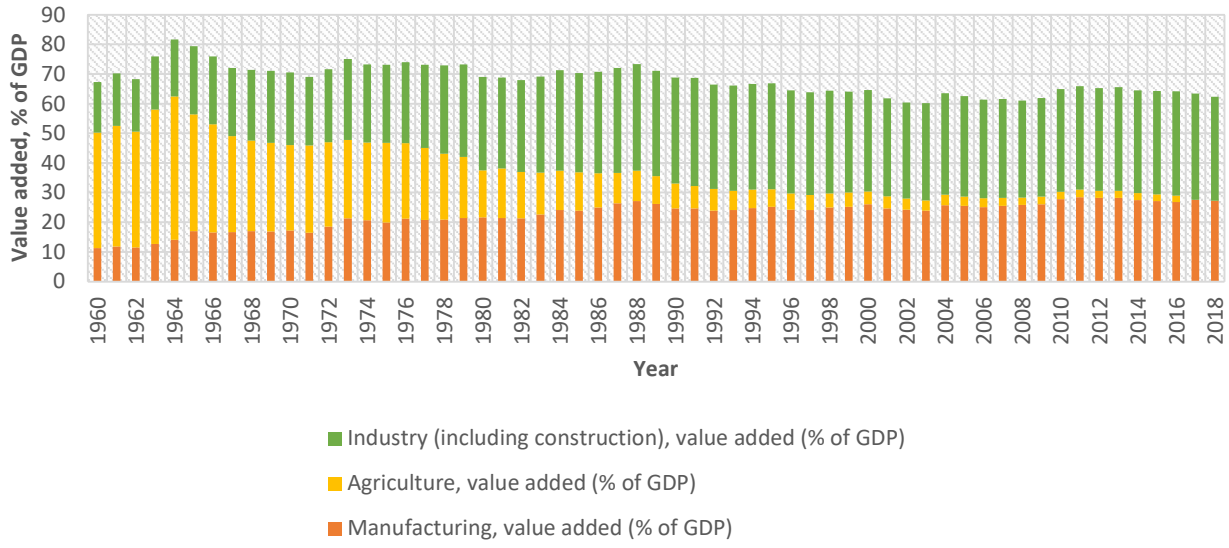


Figure 2.21.South Korea output structure,1960-2018



NOTE: Industry converts inputs or intermediates to a final output or services, which may or may not use machinery. Manufacturing is the process of transforming raw materials into finished goods, by deploying various sequential processes, labor, and machinery.

After looking at the labor participation rate, we clearly note that from the 1990's the female participation in China was significantly higher than in South Korea. This fact is linked with the strict government policy and vision that the women's place in the society is to be "a good wife and mother ".

Figure 2.22.Ratio of female to male labor force participation rate (%), China vs South Korea,1960-2019

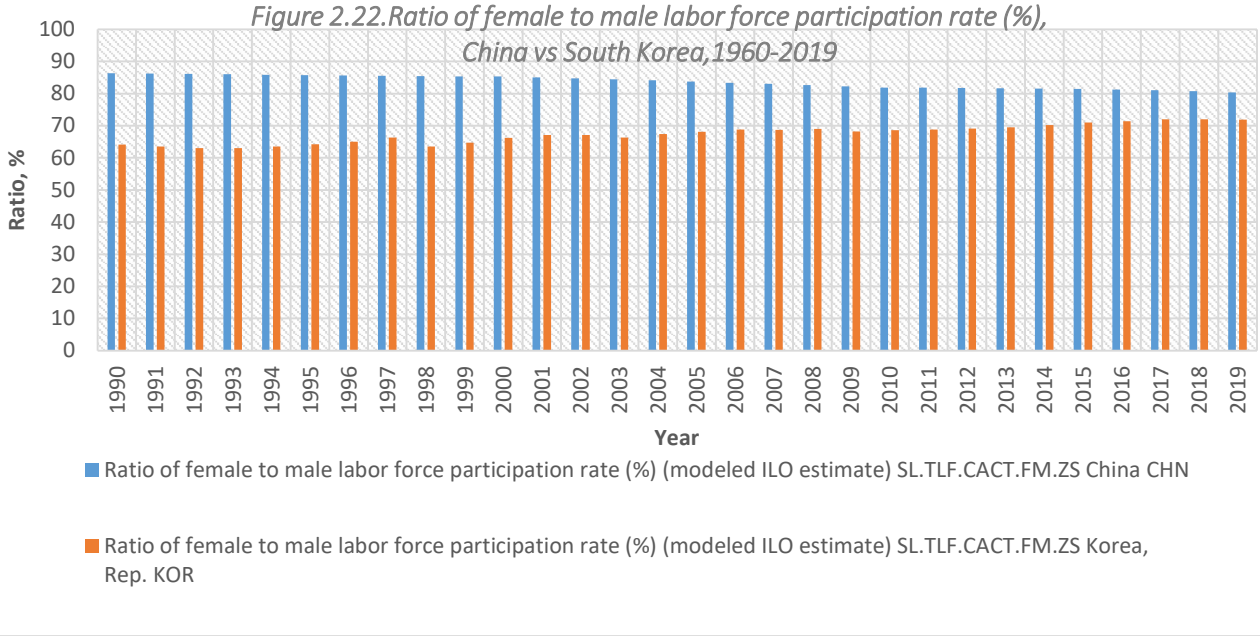
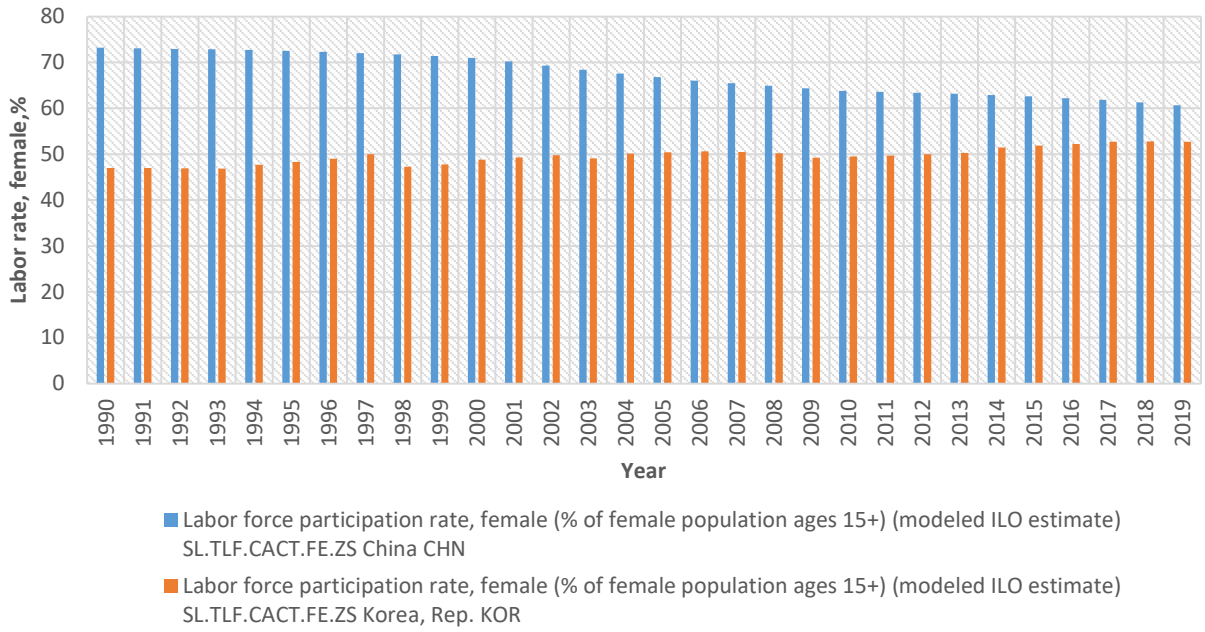


Figure 2.23.Labor force participation rate, female (% of female population ages 15+), China vs South Korea,1960-2019



It's necessary to create the policies that raise the value of girls to their parent's relative to boys to reduce discrimination against girls. For example, in China there were certain efforts to decrease the gender inequality but these efforts didn't change the fundamentals of the family system. Actually this family system when women take care of their husband's parents and children is benefic for the state. This family model maintains social stability and liberate the government from caring of the old, the young and the unemployed (Das Gupta and al.,2000). So the women's situation is improved but discrimination against girls is still exists.

The government in South Korea made an accent on raising incomes of all population (men and women altogether). And there was a little effort to ensure the gender inequality. In this way, women's situation in material question was improved significantly but their family position much less. Standards of living have improved with technological innovations in domestic work. Also women are profited in terms of women's health and child's care and the general care as well. The Education and women's participation in employment raises constantly.

In China, under the Communist regime, with collective production, women workforce was incorporated in both agriculture and industry (das Gupta, 2000) Thus, the women's income was perceived as essential to the family and they gained voice in decision making. At the same time, they are also the participants in community life. But since 1979, China shifted from collective production to market economy. In the rural areas the family became the part of "household responsibility" system. In the urban areas job market was supplemented by private business. Under these conditions living standards were improved significantly but this impacted gender equity. The women's work in agricultural sector became invisible. In rural areas the men migrated from agrarian sector to high-paying jobs and women took care of agricultural production. In urban areas, the reforms led to discriminatory practices against women. The government's effort to protect

women workers had the negative effect. The companies found women very expensive as employees and insufficient. This protection was used as justification of lower wages for women.

As South Korea is poor in land and natural resources, so government concentrated its efforts on growing up the skilled and healthy workforce. The living conditions for both sex were improved but women's participation was still very low. The women work force increased in recent years but there is discrimination in wages, limited opportunities and male-oriented culture. The parents educate son to get a good job and a daughter to get a good marriage with high income (National Statistical Office, 2000). As the women's main role in South Korean society is to be a wife and mother, the employers expect that female employees leave their jobs when marry.

To underline the individualism as the level of well-being, we see that both countries involved all the population into the economic development. Unfortunately, the women are still discriminated because of the fundamentals of family system. But as economic development led to improvements of living conditions, the both sexes are more opportunities to achieve the principal goal.

2.9.Education

Traditional education in South Korea is based on Confucian Classic and was confined to males. The girls' objective was to "be good wives and wise mothers". Primary school become universal only in 1960s. the gap in middle and high Scholl enrollment began to narrow in 1970s and didn't close completely in 1995.

Literacy rate in South Korea is 99%. This is the result of state effort which was concentrated on creating skilled workforce.

In China the Communist regime gave the universal education to both sex. This was changed after economic reforms in 1980s. The gender gap in schooling was high in rural areas (Honig , 1988). There is also a gender gap in higher education.

Figure 2.24.Literacy rate in China,1982-2018

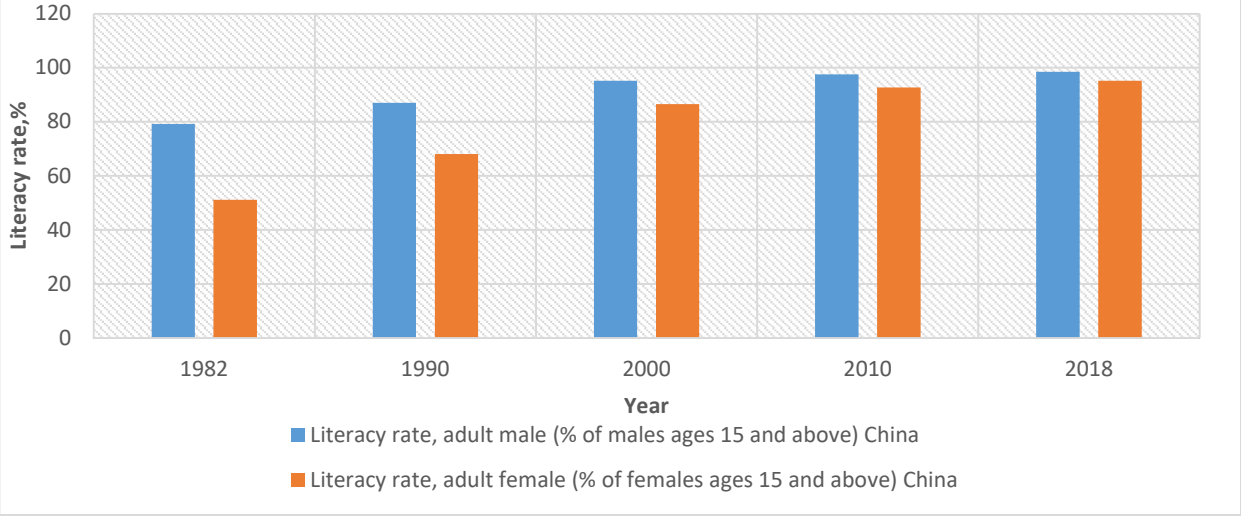


Figure 2.25.China :Progress and Completion in Education

Progress and Completion in Education

	TOTAL	MALE	FEMALE	
School life expectancy ISCED 1-8 (years)	15.95	15.35	16.58	(2018)
Percentage of repeaters in primary (%)	1.7	2.08	1.29	(2018)
Survival to the last grade of primary (%)	99.41	99.3	99.53	(2017)
Gross intake ratio into the last grade of primary (%)	101.08	99.46	102.82	(2018)
Primary to secondary transition rate (%)	99.2	98.46	100	(2017)

http://uis.unesco.org/en/country/moKorea

Figure 2.26. South Korea :Progress and Completion in Education

Progress and Completion in Education

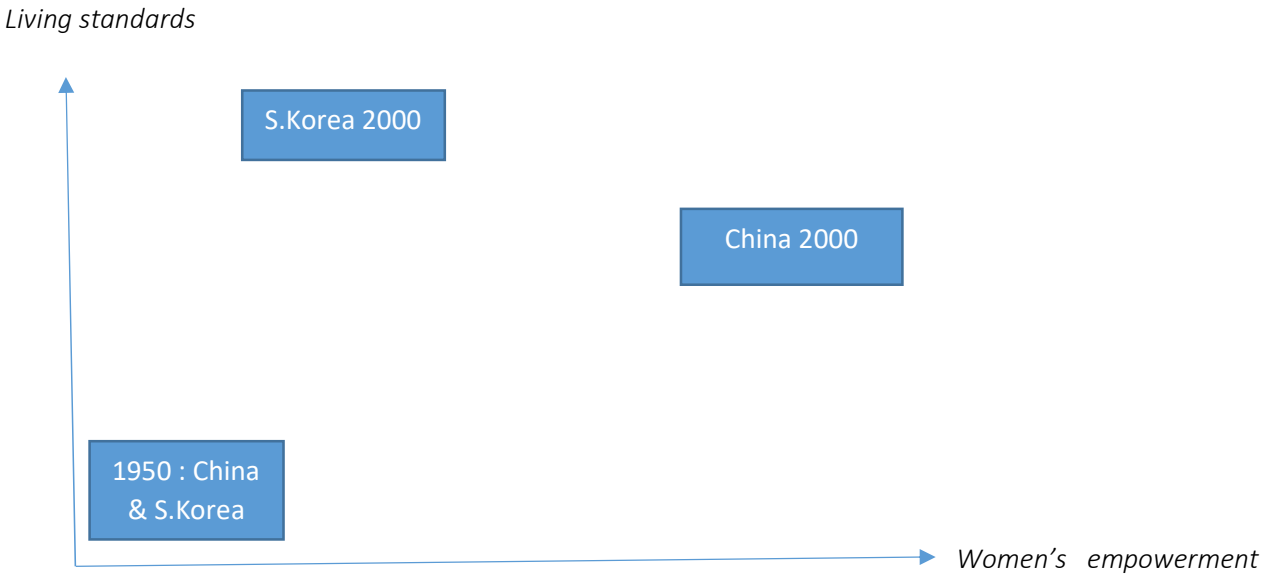
	TOTAL	MALE	FEMALE	
School life expectancy ISCED 1-8 (years)	16.48	16.97	15.91	(2017)
Percentage of repeaters in primary (%)	0	0	0	(2017)
Survival to the last grade of primary (%)	99.48	99.45	99.5	(2016)
Gross intake ratio into the last grade of primary (%)	91.36	91.56	91.13	(2017)
Primary to secondary transition rate (%)	99.64	99.77	99.5	(2016)

http://uis.unesco.org/en/country/mo

On schematic representation of women's lives we find that in 2000 the Chinese women have lower living standards but better social situation. In contrast, South Korean women have very high living standards but "women power" is very low. We can conclude that Chinese women are more independent that the Korean.

Figure 2.27. Schematic representation of changes in women's lives along two dimensions, China & South Korea 1950-2000

Das Gupta, 2000



2.10.Income Inequality

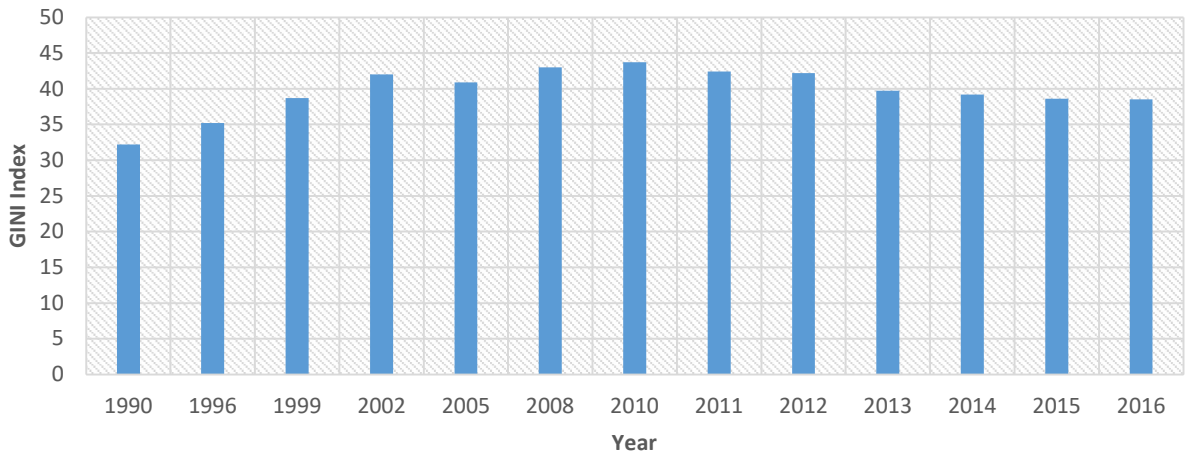
Economic development and human satisfaction of well-being leads to income inequality. Personal growth, self-development is considered as the most important life priority for young Chinese.

The China's economy main feature is a high level of income inequality . According to the Asian Development Bank Institute, "before China implemented reform and open-door policies in 1978, its income distribution pattern was characterized as egalitarianism in all aspects." At this time, the Gini coefficient for rural – urban inequality was only 0.16. As of 2012, the official Gini coefficient in China was 0.474, but scientists suggest China's inequality much greater. A study published in the PNAS estimated that China's Gini coefficient increased from 0.30 to 0.55 between 1980 and 2002. In 2012, a report published by Southwestern University of Finance and Economics estimated the Gini index of China at 0.61. China's government publishes an official yearly calculation of the country's Gini index. According to these reports, the average Gini coefficient between residents was .475 between the years of 2003 and 2018, reaching a high of 0.491 in 2008 and a low of 0.462 in 2015.

China is an emerging economy, with quarterly GDP growth rates averaging 9.31% for the past twenty years. However, China has a socioeconomic issue as the increasing income disparity

between rural-urban citizen. Despite stable economy growth through the number of reforms since 1979, China's the rural-urban income gap reached its widest in more than three decades in 2009. According to data from National Bureau of Statistics of China, city inhabitants were earning 3.33 times as much as farmers (income ratio of 3.33:1).In contrast, the income disparity was at its narrowest in 1983, at 1.82:1, due to effects of the Household-responsibility system introduced in 1978. As of year 2010, income ratio was recorded at 3.23:1. In 2014, according to an Institute of Social Science Survey, Peking University, income inequality among Chinese mainland citizens has reached severe conditions, with 1% of the Chinese population possessing 1/3 of the country's wealth.

Figure 2.28.GINI index (World Bank estimate) China,1990-2016



There are few factors of Chinese income inequality.

Urban-biased policies

According to PNAS study, more than 10% of China's total inequality is attributed to the rural-urban gap. Researcher Dennis Tao Yang published in the journal of the American Economic Association that China's base of rural-urban categorization "lies in the strategy of the centrally planned system that favored heavy-industry development and extracted agricultural surplus largely for urban capital accumulation and urban-based subsidies". In the 1980s and 1990s, state investments in the rural economy accounted for "less than 10 percent of the budget, despite the fact that the rural population was about 73-76 percent of the national population." The research published in the *Journal of Economic Modelling* demonstrates that two main drivers for rural-urban inequality are the Hukou system and absence of a fully functioning land market.

Inland-coastal inequality

The inland-costal inequality is playing an important role in income inequality across China. Nevertheless, "while the contribution of rural-urban inequality is much higher than that of inland-

coastal inequality in terms of levels, the trend is very different. The rural-urban contribution has not changed very much over time, but the inland-coastal contribution has increased by several fold,". The studies found that variations across Chinese provinces account for about 12% of the country's overall income inequality. Research on economic growth after the opening of the Chinese economy that between 1989 and 2004, income in coastal provinces more than tripled and doubles in inland provinces. Research on inland-coastal inequality indicates that "since being a coastal province is a geographic advantage that will persist, this tendency for divergence will also probably continue". Economists Ravi Kanbur and Xiao Zhang propose that the "greater ease of rural-to-urban migration within provinces, compared to the institutional and other difficulties of migrating from inland to coastal provinces" can partially explain this fact. China's Hukou system is an institutional factor that significantly inhibits interprovincial migration. The government provides efforts to encourage the growth in small and medium sized cities by introducing policies that relax Hukou restrictions. "Currently rural incomes are less equally distributed than urban incomes but urban inequality is increasing faster than rural inequality" (Wu, 2005).

Demographic Change

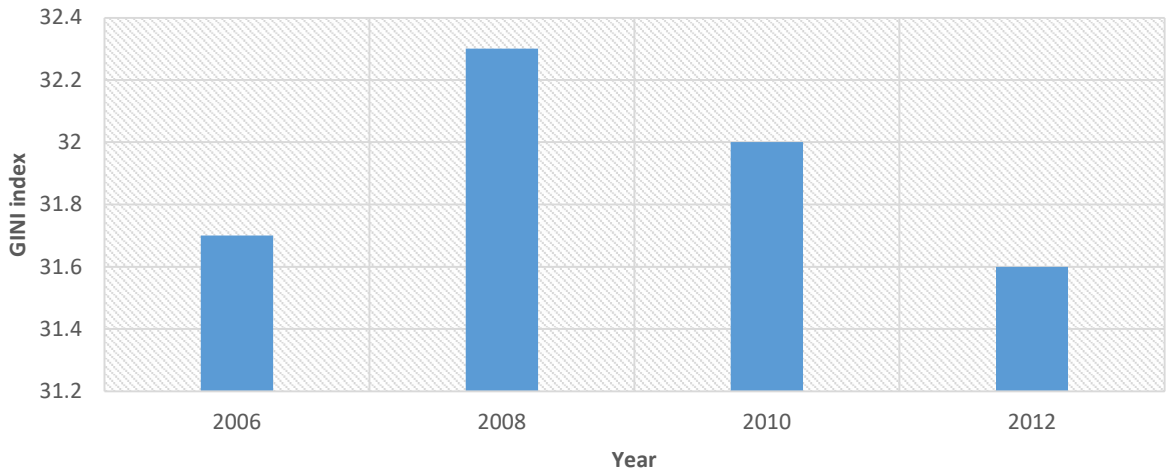
According to research published in the China Economic Review, population aging at the beginning of 2000's is "largely responsible for the quick increase in income inequality in rural China". As a result of the one-child policy, a small number of young adults have reached the working age over the course of the last ten years, leading to a significant "fall in the ratio of household members of working age." This created a labor shortage, which in combination with the rapid expansion of industrialization served to increase income inequality.

South Korea, has been known for very equal distribution of income and wealth. But this has been changing over the last twenty years. Statistics shows that in the 1990s income equality reached a peak and has declined since then. This may be due an economy that was expanding rapidly and then slowed down significantly. In a modern competitive job market, the head of household is expected to be more educated. It makes hard competition for rural families which have a lack of access to higher education. This lack leads to unequal pay outside of cities. Some researches determinate this change in income inequality to the change of traditional head of household dynamics in South Korea. There is an increase in single headed households. Low access to new jobs created a big problem of surviving which led many Korean people not to have families at all.

The rapidly aging population requires healthcare. Demographics studies concluded that the elder people have the lowest income and do not have the proper social protection. In recent years "the proportion of aged 65 and older among people with disabilities has quickly increased, from 30.3% to 43.3% in 2014.

OECD listed several factors among the reasons for poverty in Korea. First, public social spending in South Korea is low. Social spending by the government in South Korea was 7.6% of GDP in 2007, compared to the OECD average of 19%. This can be explained by the Korean traditional reliance on family and the private sector to provide such services. Second, Korea's labor market, has a significant number of workers which are hired only on temporary contracts with low wages and benefits. This fact results in high inequality in wage income.

Figure 2.29.GINI index (World Bank estimate) Korea, Rep.,2006-2012



The Gini coefficient was at 0.345 in 2018, down 0.009 from the previous year, according to joint data from Statistics Korea, the Bank of Korea (BOK) and the Financial Supervisory Service (FSS). It was the lowest since 2011. The index declined from 0.388 in 2011 to 0.352 in 2015, before edging up to 0.355 in 2016. It turned downward to 0.354 in 2017 and 0.345 in 2018 each.

CHAPTER 3. Age Pyramid projection of China.

This section discusses the projection of China's age pyramid for one generation. The goal of this estimation is to demonstrate the population changes and its impact on dependency ratio based on two hypotheses.

3.1. Data and Methodology

We know that China stopped One Child Policy in 2015 and replaced it by new policy which allows to have the second child. In this part of my paperwork I estimate an age pyramid over one generation. The hypothesis is that one generation represents 25 years. Thereby I consider the time horizon as for 25 years. In my case this will be projection from 2019 to 2044 year.

The data used for estimation was downloaded from *https://www.populationpyramid.net/china/2019/*

I present age pyramid in according to two hypotheses:

1. The Chinese women are supporting new policy; thus they have two kids.

2. The Chinese women continue to follow the OCP and modern trend, thus they have only one child.

For age pyramid calculation I used the following indicators:

Table 3.1. Indicators used for estimation

Mortality rate, infant, female (per 1,000 live births) Average = 6.9	Infant mortality rate, female is the number of female infants dying before reaching one year of age, per 1,000 female live births in a given year (2019.
Death crude rate Average = 6.8	Crude death rate indicates the number of deaths per 1,000 midyear population (2019).
Life expectancy at birth ,76 years in 2016	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

Source : https://www.worldbank.org/

Note: Life expectancy indicator used for calculation is projected based on data period 1979 (66y) to 2015 (76y) year. Based on this data, I calculated the average life expectancy growth which is 3.5y per 1 year *(Period of 35y has the 10y life expectancy growth. So 35/10 =3.5y/year life expectancy growth)*. This gives life expectancy for 2044 as for 84y. The projected value is valuable if the assumed growth will continue to occur.

First step for age pyramid estimation is the population transposition of one generation, 25 years, from the initial China pyramid in 2019. That means the shifting of age data from 0-24 age block to 25-49 age block; 25-49 age block shifts to 50-74 age block; 50-54 age shifts to 75-79 age block and 55-59 age shifts to 80-84 age block.

The second step is an applying of our two hypotheses. So that every woman from 25 to 49 age has 2 or 1 child accordingly from 0 to 24 years old.

*Population 25-49 age *2 (H1) and Population 25-49 age*1 (H2)*

After that I apply Mortality rate, infant for population 0-4 years old and Crude Death rate from age of 5 to 100+ age block population.

Population 0-4 age (H1 & H2) - Mortality rate, infant

Population 5-84 age (H1 &H2) - Crude Death rate

My age pyramid projection is estimated for both sexes altogether without distinction of female and male data.

After that I calculated separately the population 85 to 100+ age. I consider that Life Expectancy in 2044 is 84 years old as mentioned before. For the oldest age block I need to estimate differently. For this rough calculation I created a table with ratio average 85-100+ age to 0-84 age block during 5 years (2015-2019).

Table 3.2. Age ratio of 85-100+ age related to age 0-84 age population (2015-2019)

Age ratio of age 85-100+ related to age 0-84 age population (2015-2019)						
	2019	**2018**	**2017**	**2016**	**2015**	**Average**
85-89	0.00518	0.00499	0.00475	0.00443	0.00407	**0.00468**
90-94	0.00160	0.00155	0.00146	0.00134	0.00118	**0.00142**
95-99	0.00037	0.00036	0.00032	0.00027	0.00024	**0.00031**
100+	0.00005	0.00004	0.00004	0.00003	0.00003	**0.00004**

This ratio average is applied to my population estimation for 2 hypotheses as a following:

*(Total population 0-84 age * Average ratio 85-100+ age) -Crude Death rate*

3.2.Estimation results.

3.2.2Age pyramid.

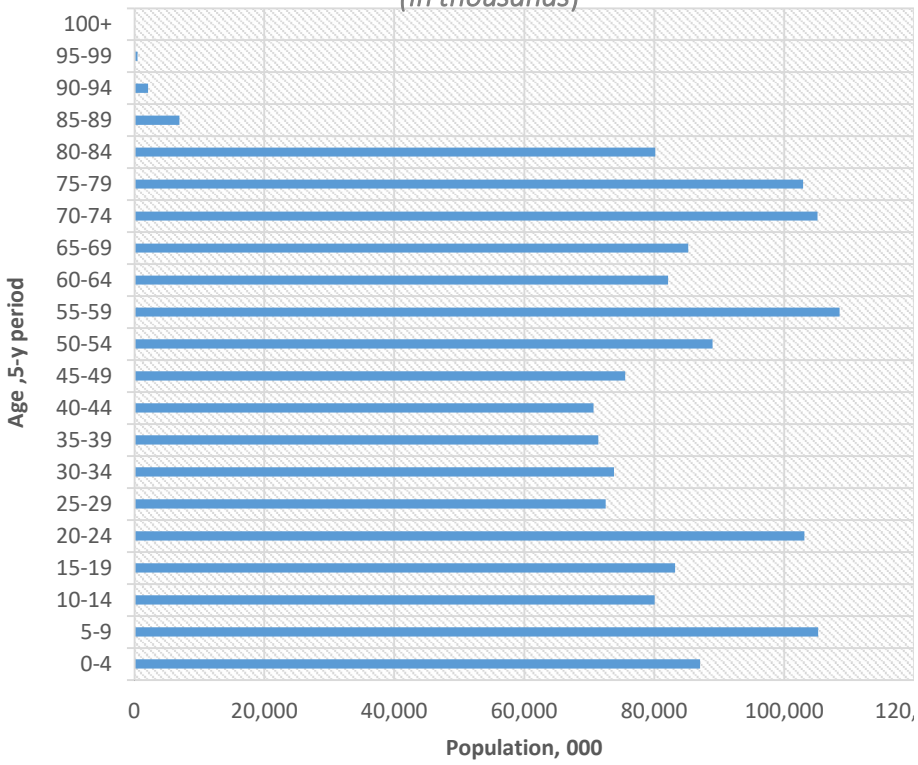
Based on estimated population projections, I built the age pyramid for 2 hypotheses.

H1: 2 child

Table 3.3. Age pyramid for H1.

Age	Population total,000
0-4	87,037
5-9	105,203
10-14	80,041
15-19	83,189
20-24	103,108
25-29	72,535
30-34	73,818
35-39	71,384
40-44	70,642
45-49	75,550
50-54	88,974
55-59	108,507
60-64	82,131
65-69	85,227
70-74	105,150
75-79	102,913
80-84	80,148
85-89	6,911
90-94	2,102
95-99	464
100+	57
	1,485,093

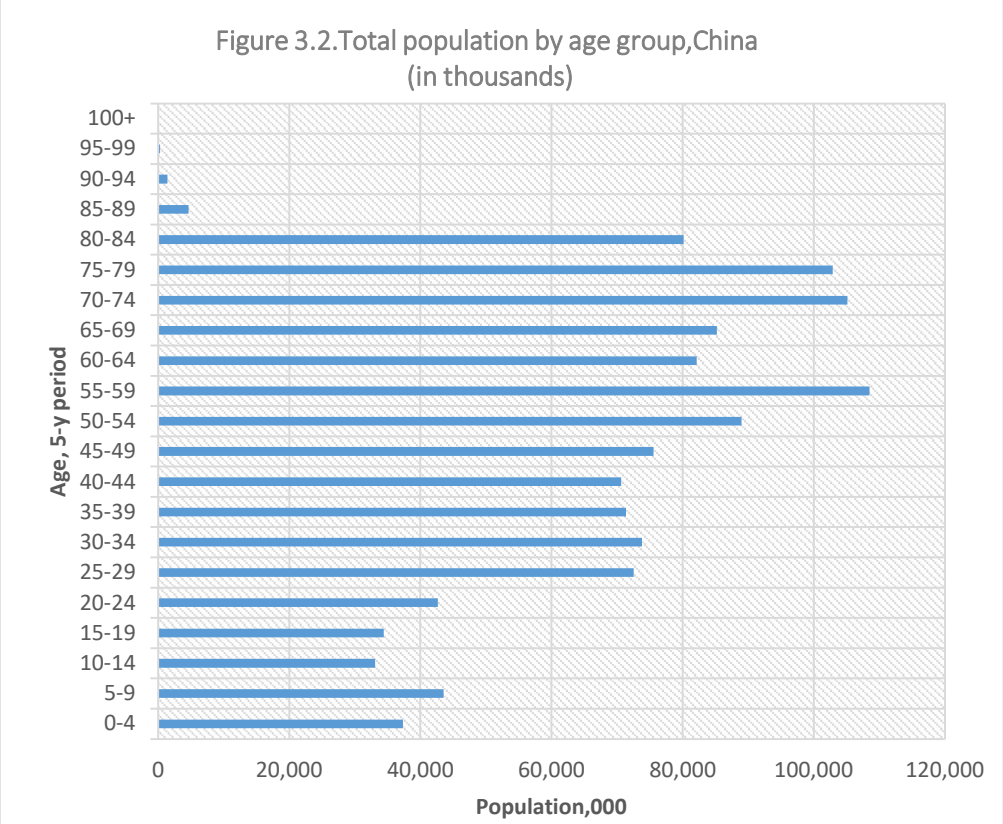
Figure 3.1.Total population by age group, China (in thousands)



H2:1 child

Table 3.4. Age pyramid for H2.

Age	Population total,000
0-4	37,356
5-9	43,532
10-14	33,120
15-19	34,423
20-24	42,665
25-29	72,535
30-34	73,818
35-39	71,384
40-44	70,642
45-49	75,550
50-54	88,974
55-59	108,507
60-64	82,131
65-69	85,227
70-74	105,150
75-79	102,913
80-84	80,148
85-89	4,622
90-94	1,406
95-99	310
100+	38
	1,214,454



As we can see, with H1, China's pyramid has a trend to be an expansive type of pyramid with larger percentage of younger population and a wide base but it doesn't have a narrow top as the life expectancy is growing, there is a high percentage of older population as well.

For H2 we note that Age pyramid has constrictive type with a narrow base, the lower percentage of young people and significant percentage of older population.

3.2.3.Dependency ratio

H1 :2 child

Age Group	Total Age Group Population,000	Share of Total Population	Dependency ratio
Youth (0-14 years) old)	272,280	18.33%	32.81
Working Age Population (15-64 years old)	829,839	55.88%	N.A.
Elderly (65 + years old)	382,973	25.79%	46.15
Total Dependency Ratio			
Youth +Elderly	655,253	44.12%	78.96

H2 : 1 child

Age Group	Total Age Group Population,000	Share of Total Population	Dependency ratio
Youth (0-14 years) old)	114,009	9.39%	15.82
Working Age Population (15-64 years old)	720,630	59.34%	N.A.
Elderly (65 + years old)	379,816	31.27%	52.71
Total Dependency Ratio			
Youth +Elderly	493,825	40.66%	68.53

After calculating Dependency ratio based on age pyramid estimation, we can see that the Total Dependency ratio is very high for both hypotheses. These high ratios indicate the enormous financial pressure on working population.

The new two-child policy will not help in 25 years but only will figure up pressure on working population. This population will need to support the youth cohort. It needs one more generation or plus to decrease the dependency ratio.

A high dependency ratio means the lack of working-age population. This lack will change the labor supply and thus will increase the labor cost. The raise of labor cost will weaken the advantage of China- cheap labor force. This fact will slow the economic growth.

From the other side, the extended longevity requires more savings and the education investments. This matter of fact impacts the economic growth in positive way.

By prolonging the retirement age, China can raise the working population and so decrease the dependency ratio.

3.3.Issues

The high dependency ratio decreases economic growth due to the large amounts of dependents that pay little or no taxes at all. This high ratio can cause serious problems for a country as a large proportion of a government's expenditure is on health, social security and education, used by the youngest and the oldest population.

Nevertheless, there are the limits of dependency ratio such as the fact that 65+ age group are not always dependent. There are always the percentage which continues to work. Another fact that many of “working age” population are not actually working.

The solution may be the promotion of immigration for younger people of working-age. This can stimulate a higher economic growth because the working-age population will grow if more young adults migrate into their country.

CONCLUSION

In my work I tried to respond to the question if the China's rapid economic growth would have had the same results with or without the One Child Policy. To build my response I compared the demographic situation and economic indicators with the similar country, South Korea.

The major factors associated with economic growth a later marriage age, more women participation in labor force, higher education level and higher health standards are very similar in both countries. However, South Korea didn't have such strict family planning policy as OCP in China.

The economic reforms launched the opened, market-oriented economy in China at the same time as the launch of OCP. This harsh economy change created the main goal of globalization- the well-being of every citizen.

The low fertility rate is below the replacement rate for China and South Korea. The economy boost made the life more expensive, including the child's birth. The enormous pressure to be successful made the parents to prefer less kids in order to give "the best" standard of living than few kids and give "the medium" standards.

The imbalanced sex-ratio is due to Confucian traditions and the low fertility rate. In its turn, the low fertility rate is a result of economic growth which includes the women's independence. This growth gave the opportunity to use the sex-selection technologies. South Korea has lower sex ratio at birth but this country began the economic development 20 years earlier than China. China can reach the same level as South Korea if maintains the economic growth rate at same paste or higher. China has a comparative advantage as Chinese women are more independent than in South Korea.

As an evidence, the economic growth led to income inequality within the population with the aged population being the most vulnerable part. The major income gap is between urban and rural areas where rural areas don't have the same labor possibilities as in urban ones. The health care is expensive and the Confucian tradition to rely on family is still very strong.

The population age pyramid shows the aging population with low fertility rates for both countries. The increasing standards of living raised the life expectancy and health care norms. There is the same trend in Dependency ratio. That is the decreasing of working-age population and increasing of elderly population. This situation slows down the economic growth.

The pyramid projection for China with 2 child birth per woman provides us the high dependency ratio and the bigger pressure on working-age in 25 years. The solution may come from the migration of working-age population from other countries. The pyramid projection with 1 child birth per woman provides also very high dependency ratio due to the lack of working population and the bigger proportion on elderly people. As the life expectancy will continue to increase, country will have more and more ageing population to support. This assumption may be reliable if China will maintain the same level of growth rate.

To conclude, based on the comparison of China with its similar neighbor, socio-economic indicators shows that One-Child Policy was not needed but only the openness of economy and globalization policy in order to achieve the current results. This modern trend led to hyper economic growth and radical changes in population's way of living. Certainly, China has to think about its development differently to be competitive on the global market. China can take as an example South Korea and invest more in human capital, growing more intellectual, educated and innovative labor force. That means to pay more attention to the quality of population and not to the number.

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